Comprehensive Final Exam - MA161a (14887113)

Due: Tue, Apr 28, 2020 01:00 PM ChST

Question 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35

Description

This comprehensive final exam covers all topics discussed in this semester: Chapter 2 - Equations and Inequalities Chapter 3 - Functions and Graphs Chapter 4 - Polynomial and Rational Functions Chapter 5 - Inverse, Exponential, and Logarithmic Functions Chapter 6 - Ch 6.1-6.3

Instructions

There are total 36 questions in this exam. You need to answer 33 questions correctly to earn 100%.

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1. Question Details SwokATG13 2.6.033. [1723479]

Solve the inequality, and express the solutions in terms of intervals whenever possible.

$$8 > \frac{5 - 3x}{9} \geq -5$$

- $\left(-\infty, \frac{50}{3}\right]$
- $\left(\frac{50}{3}, \frac{67}{3}\right]$
- $\left(-\frac{67}{3}, \frac{50}{3}\right)$
- no solution
- $\left(-\frac{67}{3}, \frac{50}{3}\right]$

Additional Materials

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2. Question Details SwokATG13 2.7.030. [1656333]

Solve the inequality, and express the solutions in terms of intervals whenever possible.

$$\frac{x + 9}{x^2 - 5x + 4} \leq 0$$

- (−∞, −9] ∪ (1, 4)
- (−∞, 1)
- (−∞, −9) ∪ (1, 4)
- (−∞, 4)
- (−∞, −9] ∪ (1, ∞)

Additional Materials

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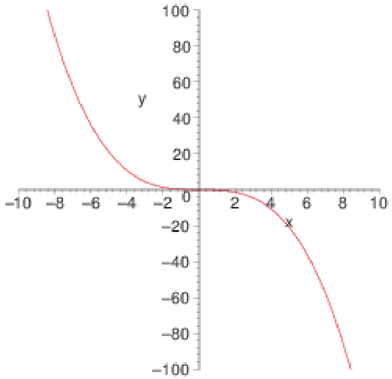
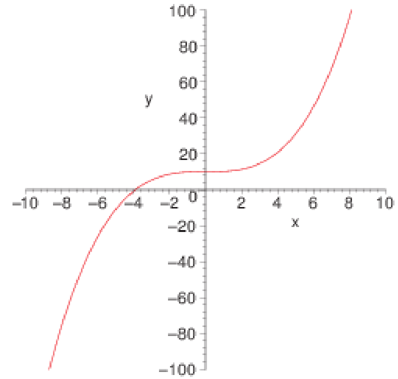
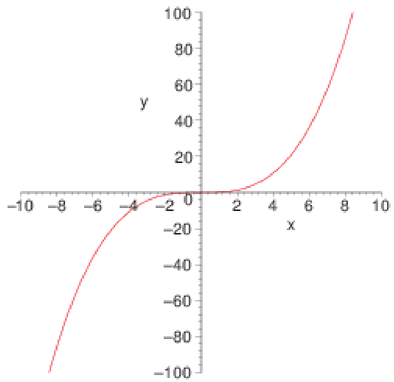
3. Question Details SwokATG13 3.2.014. [1656577]

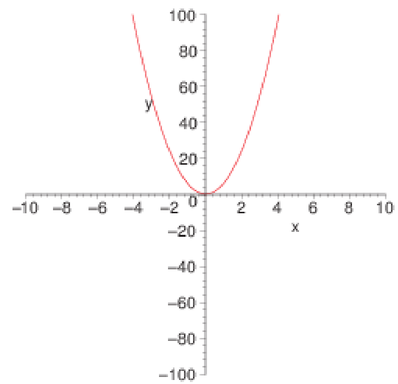
Sketch the graph of the equation.

$$y = \frac{1}{6}x^3$$









Label the *x*- and *y*-intercepts. (If an answer does not exist, enter DNE.)

x-intercept $(x, y) = ($ ______ $0, 0$ $)$

y-intercept $(x, y) = ($ ______ $0, 0$ $)$

Additional Materials

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4. Question Details SwokATG13 3.2.049. [1656812]

Find the center and radius of the circle with the given equation.

$$x^2 + y^2 - 2x + 14y - 31 = 0$$

center $(x, y) = \left(\quad , \boxed{1, -7} \right)$

radius $r =$ 9

Additional Materials

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5. Question Details SwokATG13 3.4.027. [1657244]

Find the domain of f.

$$f(x) = \frac{\sqrt{4x - 7}}{x^2 - 8x + 7}$$

- $\left[-\frac{4}{7}, 7\right) \cup (8, \infty)$
- $(-\infty, 7) \cup (7, \infty)$
- $\left(-\infty, \frac{7}{4}\right) \cup (7, \infty)$
- $\left[\frac{7}{4}, 7\right) \cup (7, \infty)$
- $(-7, -4) \cup (7, 8)$

Additional Materials

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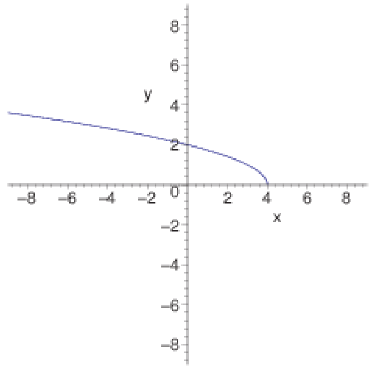
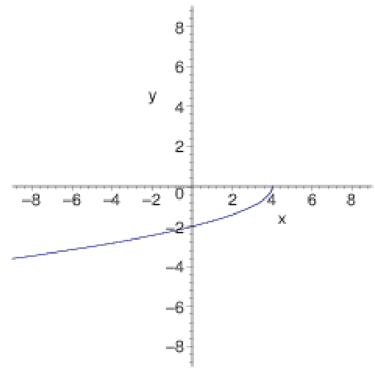
6. Question Details SwokATG13 3.4.042. [1655750]

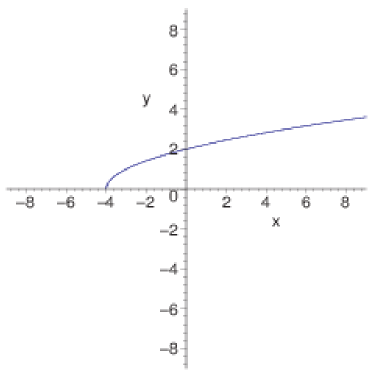
Consider the following function.

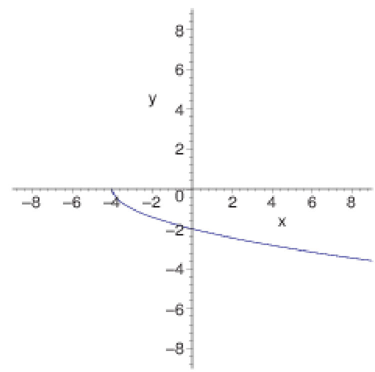
$f(x) = \sqrt{4 - x}$

(a) Sketch the graph of f.









(b) Find the domain D and range R of f.

Domain:

- $D = (-\infty, \infty)$
- $D = [-4, \infty)$
- $D = (-\infty, 4]$
- $D = (-\infty, 0)$
- $D = (0, \infty)$

Range:

- $R = (-\infty, \infty)$
- $R = (-\infty, 0)$
- $R = [0, \infty)$
- $R = (-\infty, 4]$
- $R = (0, \infty)$

(c) Find the intervals on which f is increasing, is decreasing, or is constant.

- decreasing on $(-\infty, 4]$
- increasing on $[4, \infty)$
- increasing on $(-4, \infty)$
- increasing on $(-\infty, 4]$
- decreasing on $(-\infty, 0]$, increasing $[0, 4]$, constant on $[4, \infty)$

Additional Materials

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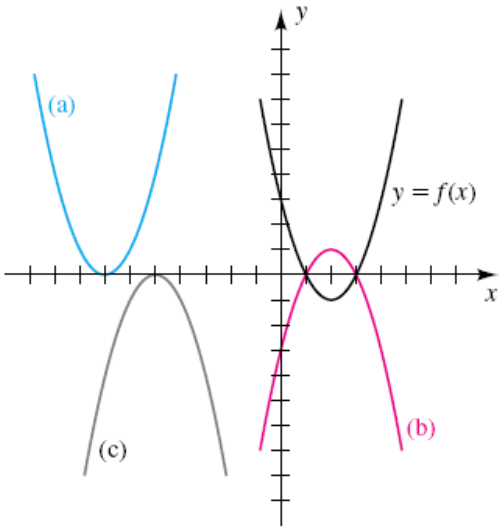
7. Question Details SwokATG13 3.5.043. [1723908]

The graph of a function f is shown, together with graphs of three other functions (a), (b), and (c). Use properties of symmetry, shifts, and reflecting to find equations for graphs (a), (b), and (c) in terms of f.



Graph (a):

- $y = f(x + 9) + 1$
- $y = f(-x - 9) + 1$
- $y = f(x - 9) - 1$
- $y = f(x + 9) - 1$
- $y = f(x - 9) + 1$

Graph (b):

- $y = \frac{1}{f(x)}$
- $y = f(-x)$
- $y = -f(x)$
- $y = -f(-x)$

Graph (c):

- $y = -f(x + 7) + 1$
- $y = -f(x - 7) - 1$
- $y = -f(x + 7) - 1$
- $y = f(x + 7) - 1$
- $y = f(x - 7) + 1$

Additional Materials

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8. Question Details SwokATG13 3.6.016. [1657403]

Consider the following function.

$f(x) = 6x^2 + 5x - 34$

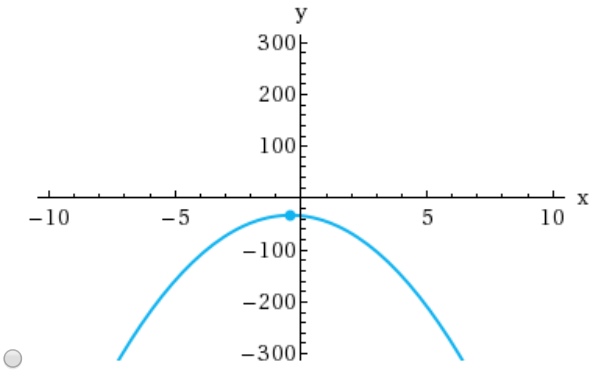
(a) Use the quadratic formula to find the zeros of f. (Enter your answers as a comma-separated list. If an answer does not exist, enter DNE.)

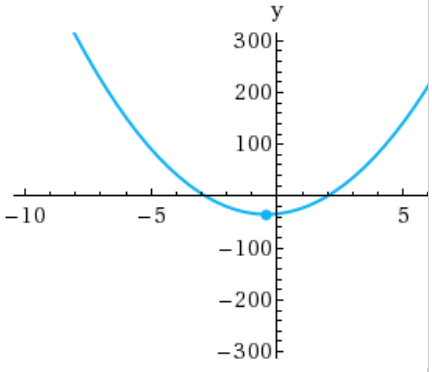
$x =$ $-\frac{17}{6}, 2$

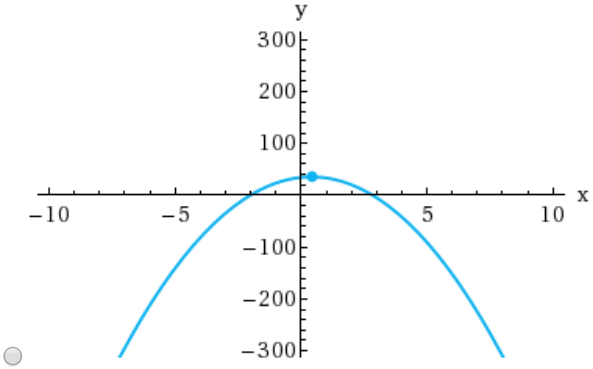
(b) Find the maximum or minimum value of $f(x)$. (Round your answer to two decimal places.)

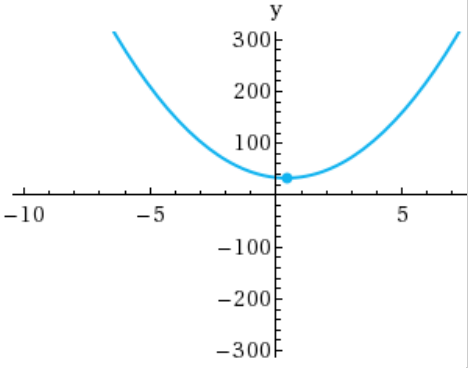
$f(x) =$ -35.04

(c) Sketch the graph of f.









Additional Materials

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9. Question Details SwokATG13 3.7.016. [1656175]

Consider the following functions.

$f(x) = 5x - 7, \quad g(x) = 5x^2 - x + 1$

(a) Find $(f \circ g)(x)$.

$25x^2 - 5x - 2$

(b) Find $(g \circ f)(x)$.

$125x^2 - 355x + 253$

(c) Find $f(g(-2))$.

108

(d) Find $g(f(3))$.

313

Additional Materials

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10. Question Details SwokATG13 4.1.020. [1657587]

Consider the following function.

$f(x) = 49x - x^3$

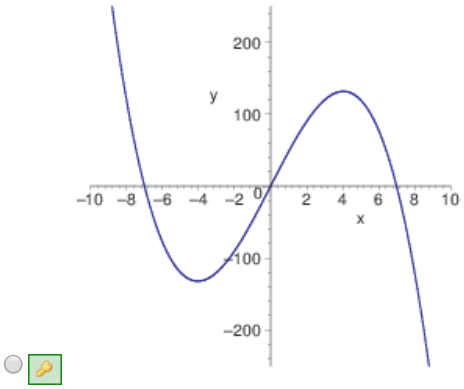
Find all values of x such that $f(x) > 0$.

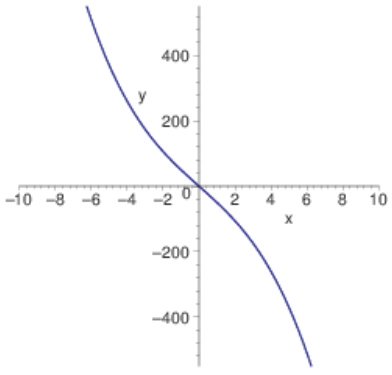
- $(-\infty, -7) \cup (7, \infty)$
- $(-\infty, -7) \cup (0, 7)$
- $(-7, 0) \cup (7, \infty)$
- $(-7, 7)$
- $(-\infty, 0) \cup (7, \infty)$

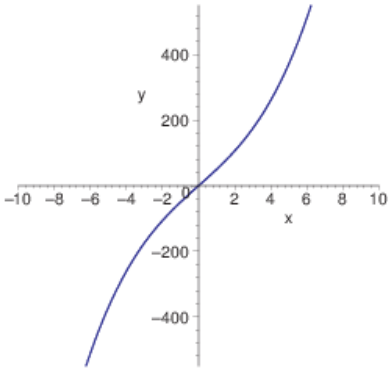
Find all values of x such that $f(x) < 0$.

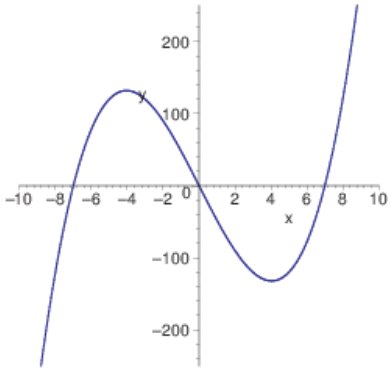
- $(-\infty, 0) \cup (7, \infty)$
- $(-7, 0) \cup (7, \infty)$
- $(-\infty, -7) \cup (0, 7)$
- $(-7, 7)$
- $(-\infty, -7) \cup (7, \infty)$

Sketch the graph of f.









Additional Materials

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11. Question Details SwokATG13 4.2.025. [1656105]

Use synthetic division to find the quotient and remainder if the first polynomial is divided by the second.

$2x^3 - 3x^2 + 4x - 4$; $x - 2$

quotient $2x^2 + x + 6$

remainder 8

Additional Materials

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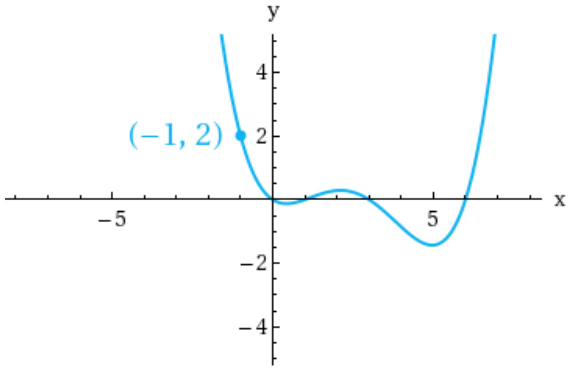
12. Question Details SwokATG13 4.3.014. [1656354]

Find the fourth-degree polynomial function whose graph is shown in the figure.

$y =$ $\frac{1}{28}x(x-1)(x-3)(x-6)$



Additional Materials

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13. Question Details SwokATG13 4.4.003. [1656420]

A polynomial $f(x)$ with real coefficients and leading coefficient 1 has the given zeros and degree. Express $f(x)$ as a product of linear and/or quadratic polynomials with real coefficients that are irreducible over $\mathbb{R}$.

1, $-5 - 3i$; degree 3

$f(x) =$ $(x-1)(x^2+10x+34)$

Additional Materials

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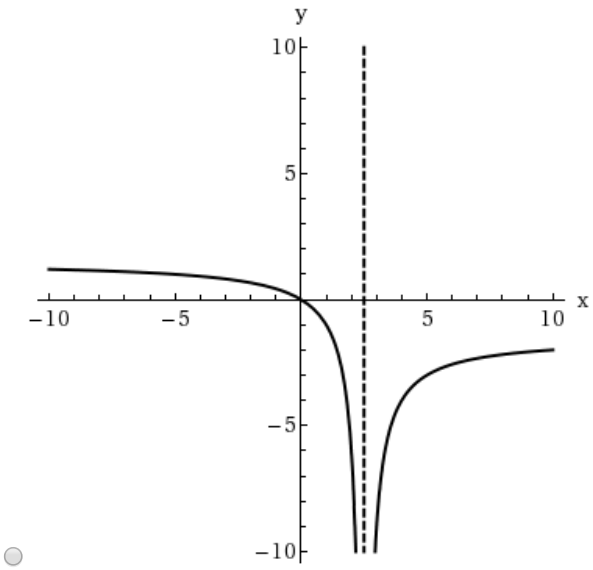
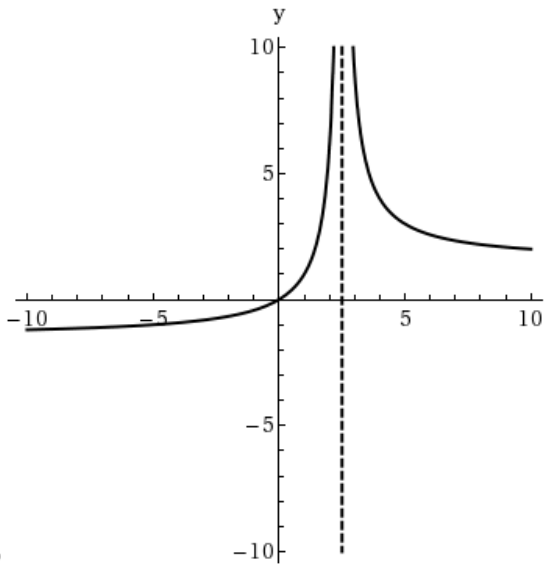
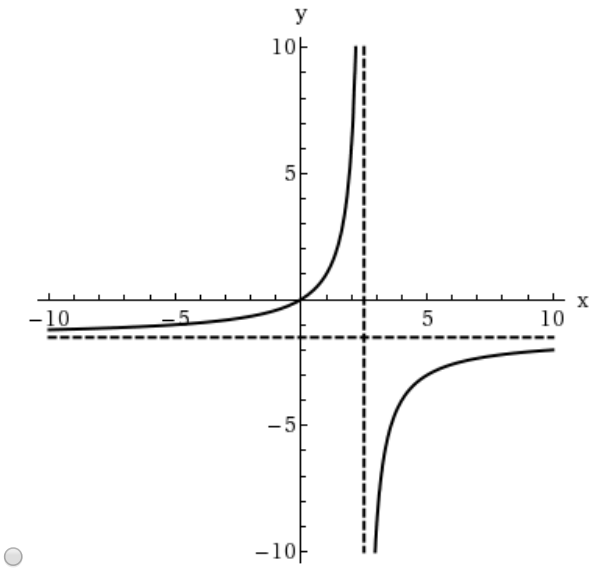
14. Question Details SwokATG13 4.5.014. [1656437]

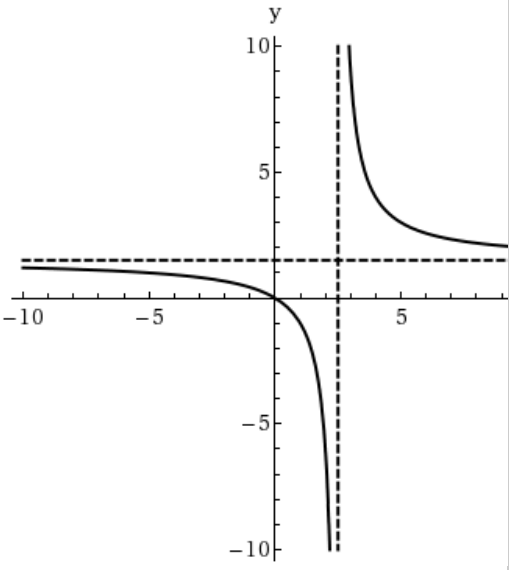
Sketch the graph of f.

$$f(x) = \frac{3x}{2x - 5}$$









Additional Materials

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15. Question Details SwokATG13 4.6.005. [1656830]

Express the statement as a formula that involves the given variables and a constant of proportionality k.

r varies directly as s and inversely as t.

$r = \frac{ks}{t}$

Determine the value of k from the given conditions.

If $s = -6$ and $t = 12$, then $r = 2$.

$k =$ -4

Additional Materials

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16. Question Details SwokATG13 5.2.007. [1656906]

Solve the equation. (Enter your answers as a comma-separated list.)

$36^{x-6} = 216^{4-x}$

$x = \frac{24}{5}$

Additional Materials

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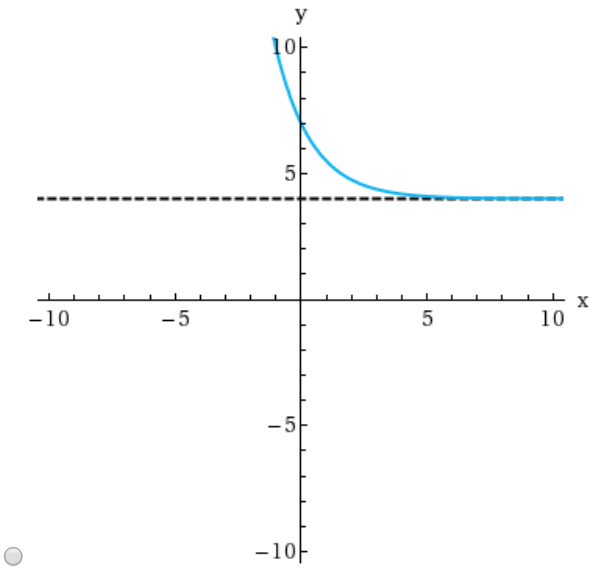
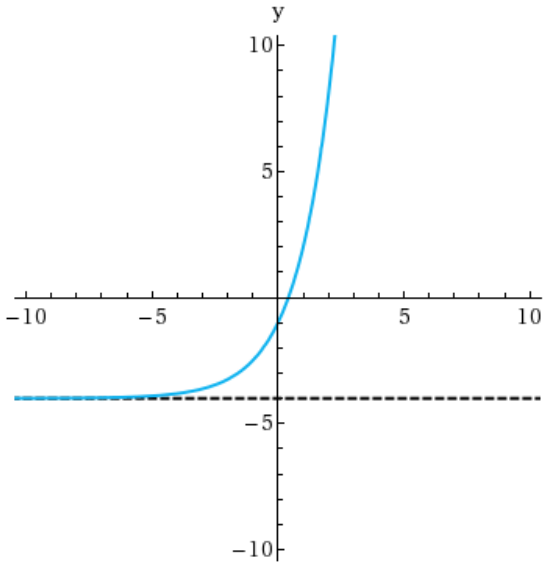
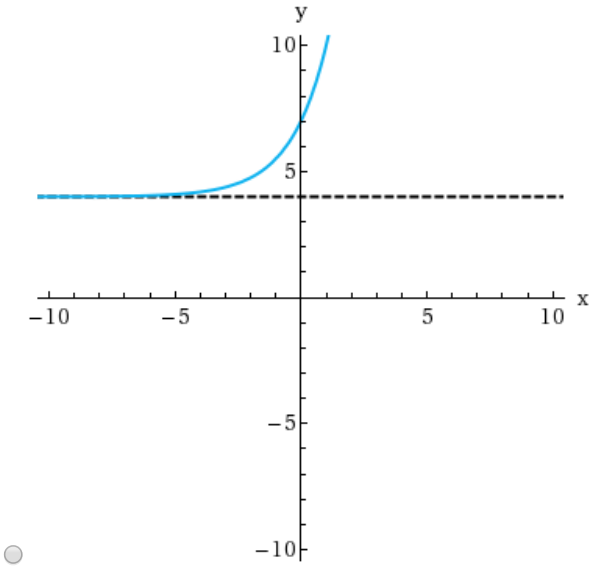
17. Question Details SwokATG13 5.2.018. [2362149]

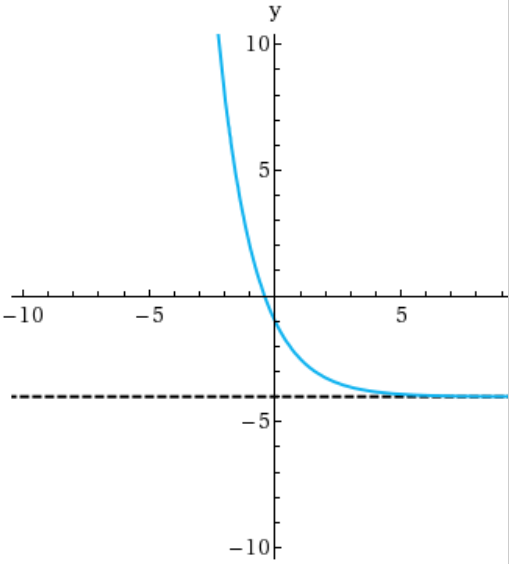
Sketch the graph of f.

$f(x) = 3(2)^{-x} - 4$









Additional Materials

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18. Question Details SwokATG13 5.2.033. [1656062]

Find an exponential function of the form $f(x) = ba^x$ that has the given y-intercept and passes through the point P.

y-intercept 8; $P(3, 1)$

$f(x) =$ $8\left(\frac{1}{2}\right)^x$

Additional Materials

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19. Question Details SwokATG13 5.4.005. [1732532]

Solve for t using a logarithm with base a.

$3a^{t/2} = 11$

$t =$ $2\log_a \frac{11}{3}$

Additional Materials

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20. Question Details SwokATG13 5.4.022. [1656838]

Solve the equation. (Enter your answers as a comma-separated list. If there is no solution, enter NO SOLUTION.)

$\log_6(x + 10) = \log_6(3 - x)$

$x =$ $-\frac{7}{2}$

Additional Materials

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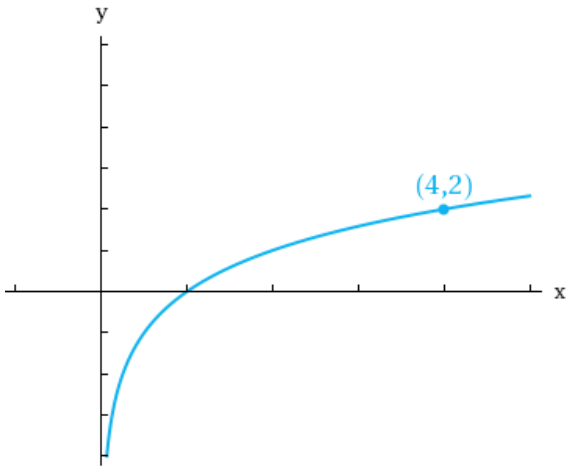
21. Question Details SwokATG13 5.4.047. [1728793]

Find a logarithmic function of the form $f(x) = \log_a x$ for the given graph.

$f(x) =$ $\log_2 x$



Additional Materials

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22. Question Details SwokATG13 5.5.004. [1655664]

Express in terms of logarithms of x, y, z, or w.

$$\log_a \frac{y^3w^2}{x^4z^3}$$

$3\log_a(y) + 2\log_a(w) - 4\log_a(x) - 3\log_a(z)$

Additional Materials

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23. Question Details SwokATG13 5.5.015. [1732790]

Write the expression as one logarithm.

$$\ln y^4 + \frac{1}{3}\ln(x^9y^{12}) - 8\ln y$$

$\ln x^3$

Additional Materials

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24. Question Details SwokATG13 5.5.029. [1655971]

Solve the equation. (Enter your answers as a comma-separated list. If there is no solution, enter NO SOLUTION.)

$$\log_3(x + 6) + \log_3(x + 4) = 1$$

$x =$ -3

Additional Materials

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25. Question Details SwokATG13 5.6.016. [1938601]

Find the exact solution, using common logarithms, and a two-decimal-place approximation of each solution. (Enter your answers as a comma-separated list. If there is no solution, enter NO SOLUTION.)

$$4^{2x + 2} = 5^{x - 1}$$

$x =$ $\dfrac{\log(80)}{\log\left(\frac{5}{16}\right)}$

$x \approx$ -3.77

Additional Materials

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26. Question Details SwokATG13 5.6.024. [1656025]

Find the exact solution, using common logarithms, and a two-decimal-place approximation of each solution. (Enter your answers as a comma-separated list. If there is no solution, enter NO SOLUTION.)

$$\log(x - 6) - \log(7x - 36) = \log(1/x)$$

$x =$ 9

$x \approx$ 9

Additional Materials

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27. Question Details SwokATG13 5.6.035. [1732728]

Solve the equation without using a calculator. (Enter your answers as a comma-separated list.)

$e^{2x} + 3e^{x} - 40 = 0$

$x =$ $\ln 5$

Additional Materials

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28. Question Details Honor Code Declaration [4018569]

On my honor as a student, I have neither given nor received aid on this test.

29. Question Details SwokATG13 6.1.004. [1656408]

If the given angle is in standard position, find two positive coterminal angles and two negative coterminal angles. (Enter your answers as a comma-separated list.)

(a) $450°$

positive angles $90, 810$ °

negative angles $-270, -630$ °

(b) $\frac{3\pi}{4}$

positive angles $\frac{11\pi}{4}, \frac{19\pi}{4}$

negative angles $-\frac{5\pi}{4}, -\frac{13\pi}{4}$

(c) $-\frac{5\pi}{3}$

positive angles $\frac{\pi}{3}, \frac{7\pi}{3}$

negative angles $-\frac{11\pi}{3}, -\frac{17\pi}{3}$

Additional Materials

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30. Question Details SwokATG13 6.1.011. [1657628]

Find the exact radian measure of the angle. (Simplify your answers completely.)

(a) 450°

$\frac{5\pi}{2}$

(b) 36°

$\frac{\pi}{5}$

(c) 100°

$\frac{5\pi}{9}$

Additional Materials

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31. Question Details SwokATG13 6.1.014. [1656368]

Find the exact degree measure of the angle.

(a) $\frac{5\pi}{6}$

150 °

(b) $\frac{4\pi}{3}$

240 °

(c) $\frac{11\pi}{4}$

495 °

Additional Materials

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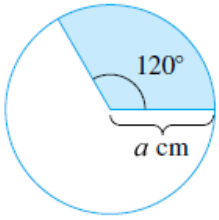
32. Question Details SwokATG13 6.1.032. [1657881]

Consider the following figure.



(a) Find the length of the arc of the colored sector in the figure. (Assume $a = 17$. Round your answer to two decimal places.)

35.60 cm

(b) Find the area of the sector. (Round your answer to two decimal places.)

302.64 cm^2

Additional Materials

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33. Question Details SwokATG13 6.2.006. [1732756]

Find the values of the six trigonometric functions for the angle θ. Assume $a = 1$, $c = 2$.

sin θ = $\frac{\sqrt{3}}{2}$

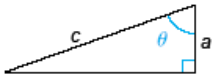
cos θ = $\frac{1}{2}$

tan θ = $\sqrt{3}$

csc θ = $\frac{2}{\sqrt{3}}$

sec θ = 2

cot θ = $\frac{1}{\sqrt{3}}$



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34. Question Details SwokATG13 6.2.012. [1732732]

Find the exact values of x and y. Assume $a = 3$.

$x =$ $2\sqrt{3}$

$y =$ $\sqrt{3}$

Additional Materials

eBook

Need Help? Watch It Talk to a Tutor

35. Question Details SwokATG13 6.2.023. [1656462]

A forester, 175 feet from the base of a redwood tree, observes that the angle between the ground and the top of the tree is 65°. Estimate the height of the tree. (Round your answer to one decimal place.)

375.3 ft

Additional Materials

eBook

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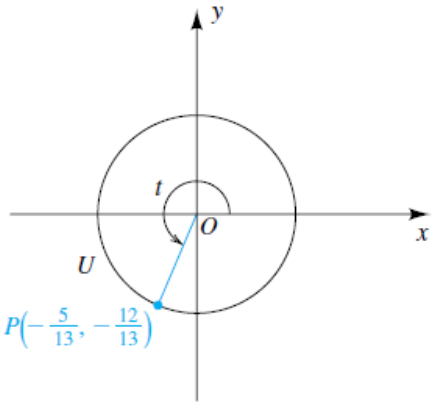
36. Question Details SwokATG13 6.3.004. [1656250]

A point $P(x, y)$ is shown on the unit circle U corresponding to a real number t. Find the values of the trigonometric functions at t.

sin t =		-12/13
cos t =		-5/13
tan t =		12/5
csc t =		-13/12
sec t =		-13/5
cot t =		5/12



Additional Materials

eBook

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37. Question Details SwokATG13 6.3.006. [1655845]

Let $P(t)$ be the point on the unit circle U that corresponds to t. If $P(t)$ has the given rectangular coordinates, find the following.

$\left(-\frac{5}{13}, \frac{12}{13}\right)$

(a) $P(t + \pi)$

$(x, y) =$ ( ) $\frac{5}{13}, -\frac{12}{13}$)

(b) $P(t - \pi)$

$(x, y) =$ ( ) $\frac{5}{13}, -\frac{12}{13}$)

(c) $P(-t)$

$(x, y) =$ ( ) $-\frac{5}{13}, -\frac{12}{13}$)

(d) $P(-t - \pi)$

$(x, y) =$ ( ) $\frac{5}{13}, \frac{12}{13}$)

Additional Materials

eBook

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Assignment Details

Name (AID): **Comprehensive Final Exam - MA161a (14887113)**
Submissions Allowed: **1**
Category: **Final**
Code: **MA161a Final Exam**
Locked: **Yes**
Author: **Lam, Steve (** steve.lam@guamcc.edu **)**
Last Saved: **Nov 25, 2019 11:43 AM ChST**
Permission: **Protected**
Randomization: **Person**
Which graded: **Question Part**

Feedback Settings
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