2018 Pre-Cal Spring Semester Review

DO ALL WORK ON A SEPARATE SHEET OF PAPER. Completed review is due on the day of your final exam to receive the curve.

UNIT 6 LAW OF SINES & COSINES

Round side lengths and area to the nearest tenth and angle measures to the nearest degree for all questions. Find all possible solutions

1. Given:
$a = 8$
$b = 5$
$m\measuredangle C = 32^o$
Find: $length\ of\ side\ c$

2. Given:
$a = 3$
$b = 6$
$c = 4$
Find: $m\measuredangle C$

3. Given:
$a = 6$
$b = 10$
$m\measuredangle A = 20^o$
Find: $length\ of\ side\ c$

4. Given:
$c = 17$
$m\measuredangle A = 51^o$
$m\measuredangle B = 87^o$
Find: $length\ of\ side\ a$

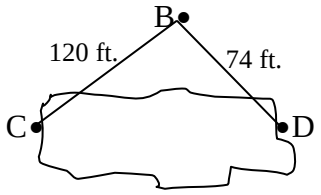
5. In $\triangle ABC$, a = 12, b = 16, c = 19. CosA equals…

A. 473/608
B. 13/128
C. 83/152
D. 135

6. In $\triangle ABC$, m∠B = 34°, m∠C = 71°, and a = 115. What is the measure of side b?

a) $\frac{115\sin 34^o}{\sin 76^o}$
b) $\frac{115\sin 76^o}{\sin 34^o}$
c) $\frac{115\sin 34^o}{\sin 71^o}$
d) $\frac{115\sin 71^o}{\sin 34^o}$

7. An engineer wants to measure the width of a sinkhole. He places a stake at B as shown and measures from the stake to C and D as shown. If the angle at B is 103°, how wide is the sinkhole?



UNIT 7 FUNCTIONS

For #1 – 4, find the domain of each function. <u>USE INTERVAL NOTATION!!</u>

1. $f(x) = x^4 - 3x^3 + 12x - 5$

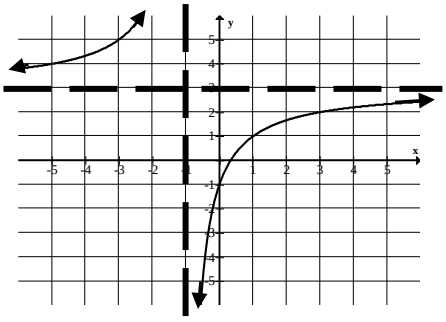
2. $f(x) = \sqrt{6x + 15}$

3. $f(x) = \frac{x-1}{5x+12}$

4. $f(x) = \sqrt{\frac{1}{x-4}}$

For #5-6, find the domain and range of each graph.

5.



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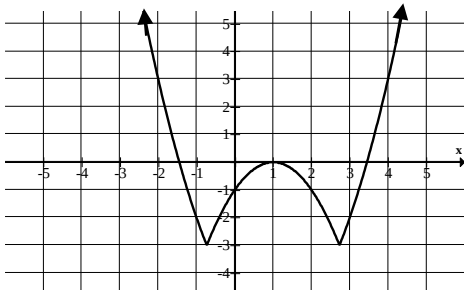


Use the following information for #7-8.

$f(x) = x^2 - 10x + 7$ $g(x) = x^3 - 4x - 13$

7. Find f(x + 1)

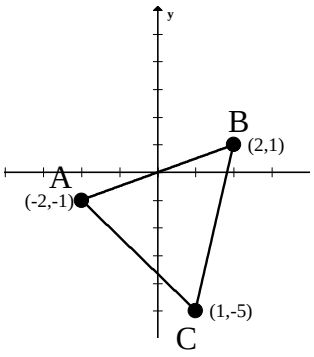
8. find g(-4)

9. Write the equation of the line that is the perpendicular bisector of the line segment containing the points (6, 2) and (-1, 5).

10. Write the equation of the vertical line through the point (4, 1).

11. Write the equation of the horizontal line through the point (4, 1).

Use the diagram to the right for #12-13:



12. Write the equation of the line through C and the midpoint of AB.

13. Write the equation of the line through A and perpendicular to BC.

For #14-15, describe the transformations of the graph from $f(x) = x^2$.

14. $f(x) = \frac{1}{2}(x+1)^2 - 7$

15. $f(x) = -3(x-2)^2 + 4$

16. Write the equation in standard form $f(x) = a(x-h)^2 + k$ by completing the square.

$f(x) = 3x^2 - 12x + 10$

17. What is the vertex and axis of symmetry of the graph of $f(x) = x^2 + 4x - 1$?

Use the following function for # 18-21

$f(x) = 3x^2 - 5$ $g(x) = x^2 - 4$ $h(x) = \frac{1}{2x-5}$

Write the following functions in simplified form and state the domain.

18. $f + g$ (2)

19. $f - g$ (-3)

20. $f \bullet h$

21. $\frac{g}{h}$

Use the following functions for # 22-24.

$f(x) = \sqrt{3x+1}$ $g(x) = x - 7$

Write the following functions in simplified form and state the domain.

22. $f \circ g$

23. $g(f(x))$

24. $f(g(10))$

Perform the indicated operations.

25. $(3x^2 - 2x + 9) - (-6x^2 + 5x - 8)$

26. $(x+2)(x^2 - 4x - 5)$

27. $(x+6)^2 + (x-6)^2$

28. $-5a^4(a^2 - 3a + 1)$

Graph the following piecewise functions

29. $y = \begin{cases} 2x-2, & x>1 \\ -x^2+1, & -2<x\le 1 \\ -x-1, & x\le -2 \end{cases}$

30. . $f(x) = \begin{cases} x^2, & x\le 2 \\ x, & x>2 \end{cases}$

UNIT 8 POLYNOMIALS

Factor completely with respect to the integers:

1. $27x^3-8y^6$ **2.** $4m^2+11m-20$ **3.** $a^4-a^2k-56k^2$ **4.** $4x^3+6x^2-10x-15$

5. Find the quotient and remainder using **long division**:

$$\left(x^4-2x^3-2x+7\right)\div\left(x^2+x+1\right)$$

7. Is $x-1$ a factor of $f(x)=2x^{10}-x^8+x^7+x^6+2x^2-5$?

6. Find the remainder of:

$$\left(3x^3-5x^2+2x-6\right)\div\left(x+3\right)$$

UNIT 9 RATIONALS

Find the domain, vertical asymptotes, and horizontal asymptote:

1. $f(x)=\dfrac{3x+5}{x^2-3x+2}$

Find the end behavior asymptotes (HA/SA) for:

2. $f(x)=\dfrac{10x^2-11x+7}{2x-3}$ (Long Divison)

Identify all important information

3. $f(x)=\dfrac{3x^2+3}{x^2-25}$

y-int: _____ x-int: _____ VA: _____ HA/SA: _____

Find the domain, removable discontinuities, vertical asymptotes, and horizontal or slant asymptotes for each function:

4. $f(x)=\dfrac{x^2-x-20}{x-5}$

5. $f(x)=\dfrac{x+4}{x^2+2x-63}$

Solve the following:

6. $\dfrac{k-8}{k-3}=\dfrac{k+8}{k+3}$

7. $\dfrac{2z-2}{z-3}=\dfrac{2z-1}{z-2}$

UNIT 9 LOGARITHMS

Solve for *x*: *round 2 decimal places*

1. $\sqrt{7}^{5x-1}=\left(\dfrac{1}{49}\right)^{x-4}$ **2.** $3^x=\left(\dfrac{1}{3}\right)^{x-3}$ **3.** $\log_x 125=3$ **4.** $\log_2 x=-5$

5. $\log_{\sqrt{2}} x=-3$ **6.** $\log x=\dfrac{1}{3}\log 64-\dfrac{1}{5}\log 32$ **7.** $\log_4(3x-4)-\log_4(x+4)=2\log_4 3$

8. Use the Laws of Logarithms to combine the expression into a single log

A. $\log_5\left(x^2-1\right)-\log_5(x-1)$

B. $\ln(a+b)+\ln(a-b)-2\ln c$

9. Which function is equivalent to $f(x) = 2^{3-5x}$?

A. $g(x) = \left(\frac{1}{8}\right)^{-5x}$ **B.** $g(x) = \left(\frac{1}{8}\right)^{x-\frac{3}{5}}$ **C.** $g(x) = \left(\frac{1}{2}\right)^{5x-3}$ **D.** $g(x) = \left(\frac{1}{2}\right)^{5x}$ **E.** $g(x) = \left(\frac{1}{2}\right)^{x-\frac{3}{5}}$

Evaluate:

10. $49^{-\log_7 4}$ **11.** $36^{3\log_6 2}$ **12.** $\log_2\left(\log_2\left(\log_2 16\right)\right)$

13. $\log\left(\log_2\left(\log_3 9\right)\right)$ **14.** $\ln x = -4.2$ **15.** $2.13^x = 6.3$

16. $3e^{-x} - 4 = 9$ **17.** $\ln\left(2x+7\right) = -3$

18. How long will it take an investment of $1100 at 7.45% APR to grow to $2500 if the interest rate is compounded monthly? *Round to 1 decimal place*

UNIT II CONICS

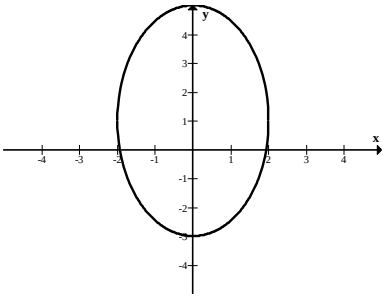
1. Find the center and radius of the circle: $4x^2 + 4y^2 - 16x + 24y + 4 = 0$

2. Find the vertex, focus, and directrix of the parabola: $4x^2 + 4x - 4y + 16 = 0$

3. Write the equation of a circle whose diameter has endpoints $(5,-3)$ and $(-3,7)$.

Find the equation for the following graphs.

4)



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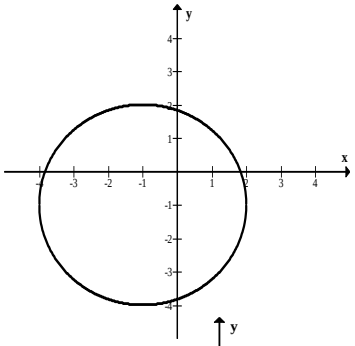

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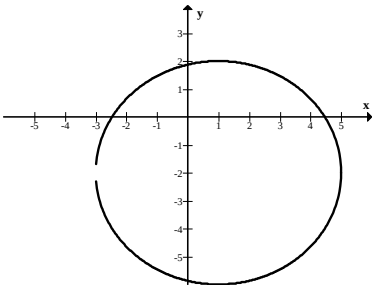

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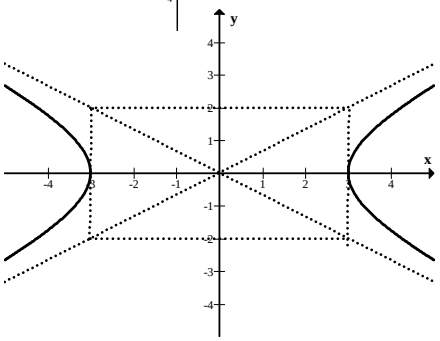

Classify the following as Circles, Ellipses, Hyperbolas, or Parabolas.

8) $x^2 - y^2 + 2x - 4y - 6 = 0$ 9) $2x^2 + 2y^2 - 8 = 0$ 10) $5x^2 + 4y^2 + 5x - 8y - 6 = 0$

11) $3x^2 - 3y^2 - 12 = 0$ 12) $-x^2 - 3y^2 - 12x = 0$ 13) $y^2 + 4y - x = 0$

You should also study your old tests and quizzes. Good Luck!

Friday 5/25 – 6th period
Tuesday 5/29 – 1st period and 5th period
Wednesday 5/30 – 3rd period and 4th period (early release)
Thursday 5/31 – 2nd period and 7th period (early release)