

Name _____ Period _____

Sec 3 FINAL Review

Part I: Matching

Match rational expressions on the left with their simplified form on the right.

_____ 1) $\frac{x-4}{x+4} \div \frac{x-4}{x+5}$

a) $\frac{x+4}{x+5}$

_____ 2) $\frac{3x+6}{x^2+6x+8}$

b) $\frac{3}{x+4}$

_____ 3) $\frac{3}{x+4} + \frac{2}{x-4}$

c) $\frac{17x+4}{x^2+x-20}$

_____ 4) $\frac{x+4}{x-4} - \frac{x-4}{x+5}$

d) $\frac{5x-4}{x^2-16}$

_____ 5) $\frac{x^2-16}{x^2+x-20}$

e) $\frac{x+5}{x+4}$

_____ 6) If $9^x = 1$, then...

a) $x = 9$

b) $x = \frac{1}{3}$

c) $x = 1$

d) $x = 0$

_____ 7) If $143^{-7x-1} = 143^{-5x+7}$, then...

a) $x = 2$

b) $x = -4$

c) $x = 2$

d) $x = 4$

_____ 8) Re-Write in logarithmic form: $4^3 = 64$

a) $\log_3 4 = 64$

b) $\log_3 64 = 4$

c) $4\log 3 = 64$

d) $\log_4 64 = 3$

_____ 9) Which of the following would **not** simplify to give you b^4 ?

a) $b^3 \cdot b$

b) $b^7 \div b^3$

c) $b^2 \cdot b \cdot b$

d) $b^7 - b^3$

_____ 10) Which of the following is the inverse of $f(x) = 5^x$?

a) $f^{-1}(x) = \log_5 x$

b) $f^{-1}(x) = \sqrt[x]{5}$

c) $f^{-1}(x) = \sqrt[5]{x}$

d) $f^{-1}(x) = \log_x 5$

_____ 11) Which of the following will **not** simplify to give you the same answer as $\sqrt[4]{x^8}$?

a) $x^{\frac{1}{2}} \cdot x^4$

b) $\frac{x^{\frac{1}{2}} \cdot x^6}{x^6}$

c) $\sqrt{x^4}$

d) $\frac{x^6}{x^3}$

_____ 12) If you know that $f(x) + g(x) = x^2 - x + 3$ then which of the following are possibilities for $f(x)$ and $g(x)$?

a) $f(x) = x^2 + 3$ and $g(x) = x$

b) $f(x) = x^2 + 5x - 3$ and $g(x) = -x^2 - 4x + 3$

c) $f(x) = 3x^2 - 2x + 5$ and $g(x) = -2x^2 + x - 2$

d) $f(x) = 5x^3 - 4x^2 + 10x - 2$ and $g(x) = -5x^3 + 4x^2 - 9x + 5$

_____ 13) Select the function below that has the roots of +3 and -4.

a) $f(x) = (x+3)(x+4)$

b) $f(x) = (x-3)(x+4)$

c) $f(x) = (x+3)(x-4)$

d) $f(x) = (x-3)(x-4)$

_____ 14) Select the function below that has roots of -2 and 6.

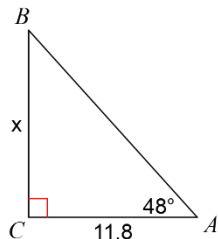
a) $f(x) = x^2 - 12x + 4$

b) $f(x) = x^2 - 4x - 12$

c) $f(x) = x^2 + 4x - 12$

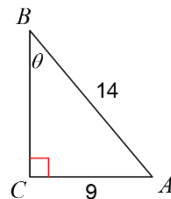
d) $f(x) = x^2 - 2x - 16$

_____ 15) Find the missing side.



- A) 13.1 B) 16.1
C) 13.7 D) 15.8

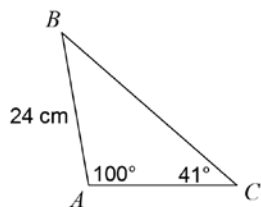
_____ 16) Find the missing angle.



- A) 42.2° B) 32.8°
C) 40° D) 44.6°

_____ 17) Find the missing side.

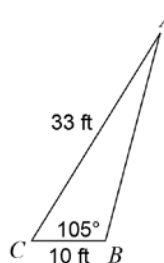
Find BC



- A) 39 cm B) 37 cm
C) 36 cm D) 34 cm

_____ 18) Find the missing angle.

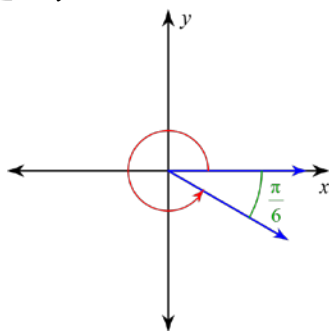
Find $m\angle A$



- A) 23° B) 18°
C) 17° D) 16°

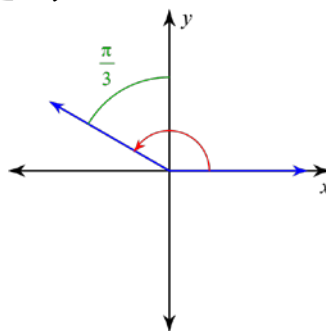
Find the measure of the angle. (positive direction from 0).

_____ 19)



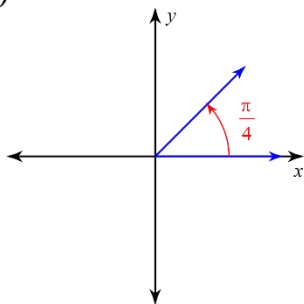
- A) $\frac{7\pi}{6}$ B) $\frac{11\pi}{6}$
C) $-\frac{11\pi}{6}$ D) $\frac{67\pi}{36}$

_____ 20)



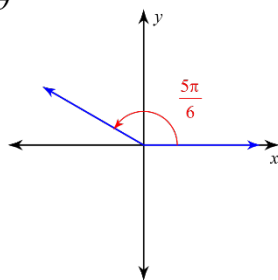
- A) $\frac{4\pi}{3}$ B) $\frac{3\pi}{4}$
C) $\frac{5\pi}{6}$ D) $\frac{2\pi}{9}$

_____ 21)
 $\sin \theta$



- A) $\frac{\sqrt{2}}{2}$ B) 1
 C) $\frac{\sqrt{2}}{2}$ D) $\frac{2\sqrt{3}}{3}$

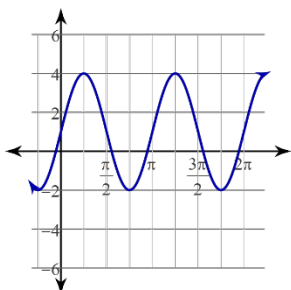
_____ 22)
 $\cos \theta$



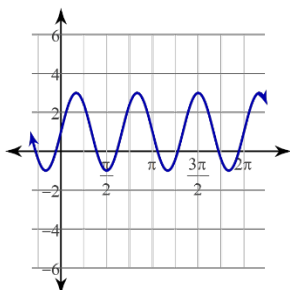
- A) -1 B) $-\frac{\sqrt{3}}{2}$
 C) $\sqrt{3}$ D) $-\frac{2\sqrt{3}}{3}$

_____ 23) $y = 3\sin 2\theta + 1$

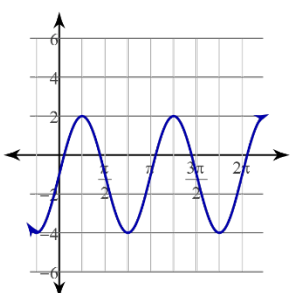
A)



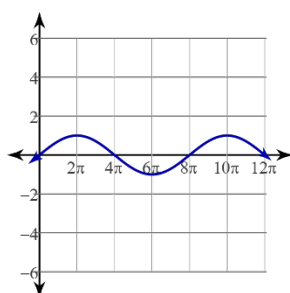
B)



C)



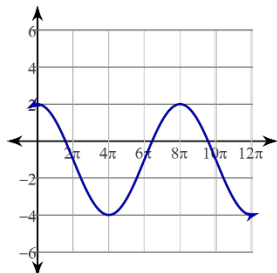
D)



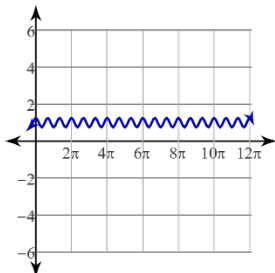
_____ 24)

$$y = 3\cos \frac{\theta}{4} + 1$$

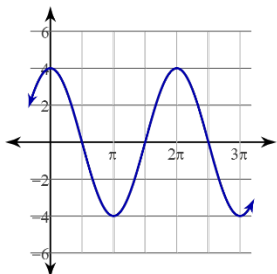
A)



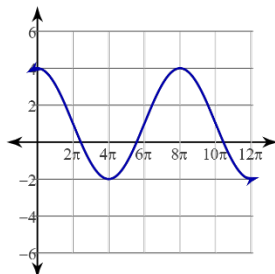
B)



C)



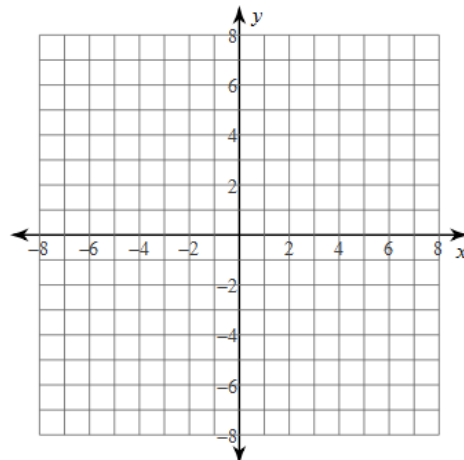
D)



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25) Write a polynomial that has a leading coefficient of 1, and the following zeros: 2, -1, -3

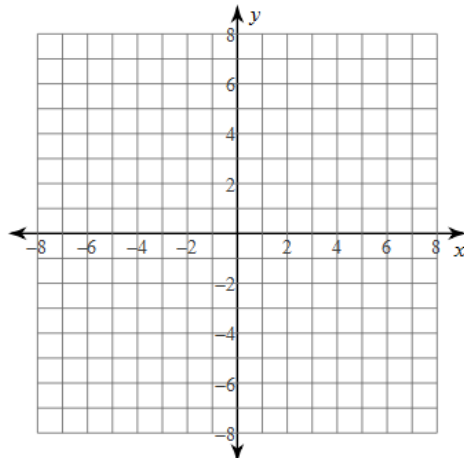
a) **factored form**_____



b) **standard form**_____

Factor Completely. (5 points each)

26) **standard form:** $x^3 + 6x^2 + 3x - 10$ given $(x+2)$ is a factor. (long division)



Factored form: $(x + 2)(\underline{\hspace{1cm}})(\underline{\hspace{1cm}})$

Zeros: _____

Part II: Short Answer (27-30)

$$f(x) = x + 3, \quad g(x) = 3x - 4, \quad \text{and} \quad h(x) = x^2 + 2x - 1$$

27) $f(x) + g(x)$

28) $h(x) - g(x)$

29) $f(x) \cdot g(x)$

30) $f(g(x))$