

Name _____

Determine whether the relation is a function.

1) $\{(1, -9), (1, -8), (6, -1), (9, 8), (11, 9)\}$

A) Function

B) Not a function

Find the equation of the line through the given pair of points. Solve it for y if possible.

2) $(-5, -7), (-2, 8)$

A) $y = 5x + 18$

B) $x = -5$

C) $y = 3x + 8$

D) $y = 15x + 68$

Use the given conditions to write an equation for the line in the indicated form.

3) Passing through $(4, 3)$ and perpendicular to the line whose equation is $-3x + y - 3 = 0$;
slope-intercept form

A) $y = -3x - 13$

B) $y = \frac{1}{3}x - \frac{13}{3}$

C) $y = -\frac{1}{3}x + \frac{13}{3}$

D) $y = -\frac{1}{3}x - \frac{13}{3}$

Find the distance between the pair of points.

4) $(-5, -1)$ and $(1, -3)$

A) 8

B) $32\sqrt{2}$

C) 32

D) $2\sqrt{10}$

Find the midpoint of the line segment whose end points are given.

5) $(4, 6)$ and $(-2, 1)$

A) $(3, \frac{5}{2})$

B) $(1, \frac{7}{2})$

C) $(2, 7)$

D) $(6, 5)$

Write the equation for the circle described.

6) Center at $(8, 10)$, passing through $(11, 14)$

A) $(x - 10)^2 + (y - 8)^2 = 9$

B) $(x + 10)^2 + (y + 8)^2 = 9$

C) $(x + 8)^2 + (y + 10)^2 = 25$

D) $(x - 8)^2 + (y - 10)^2 = 25$

Find the difference quotient, $\frac{f(x+h) - f(x)}{h}$, for the function and simplify it.

7) $g(x) = 9x^2 + 9x - 14$

A) $9x + 6 + 18h$

B) $18x + 9 + 9h$

C) $18x + 9$

D) $18xh + 9h + 9h^2$

Find the requested composition of functions.

8) Given $f(x) = 4x^2 + 3x + 8$ and $g(x) = 3x - 4$, find $(g \circ f)(x)$.

A) $4x^2 + 3x + 4$

B) $12x^2 + 9x + 28$

C) $12x^2 + 9x + 20$

D) $4x^2 + 9x + 20$

Divide using synthetic division.

$$9) \frac{x^5 + x^3 - 5}{x - 2}$$

A) $x^4 + 3 + \frac{1}{x - 2}$

B) $x^4 + 2x^3 + 4x^2 + 9x + 18 + \frac{31}{x - 2}$

C) $x^4 + 2x^3 + 5x^2 + 10x + 20 + \frac{35}{x - 2}$

D) $x^4 + 3x^2 + \frac{1}{x - 2}$

Find all of the real and imaginary zeros for the polynomial function.

10) $f(x) = 3x^4 - 15x^3 + 30x^2 - 60x + 72$

A) -2, -3, -2i, 2i

B) 2, 3, -i, i

C) 1, 3, -4i, 4i

D) 2, 3, -2i, 2i

Find the vertical asymptotes, if any, of the graph of the rational function.

11) $h(x) = \frac{x}{x(x + 3)}$

A) $x = 0$ and $x = 3$

B) $x = 0$ and $x = -3$

C) $x = -3$

D) no vertical asymptote

Find the horizontal asymptote, if any, of the graph of the rational function.

12) $h(x) = \frac{-4x + 7}{2x - 3}$

A) $y = -2$

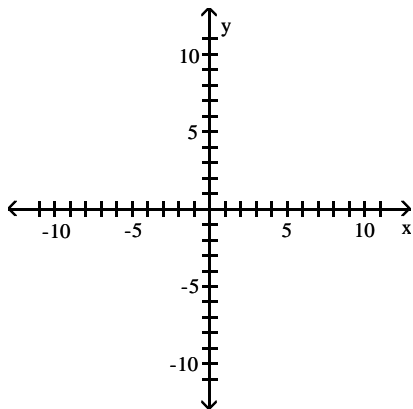
B) $y = -4$

C) $y = -\frac{7}{3}$

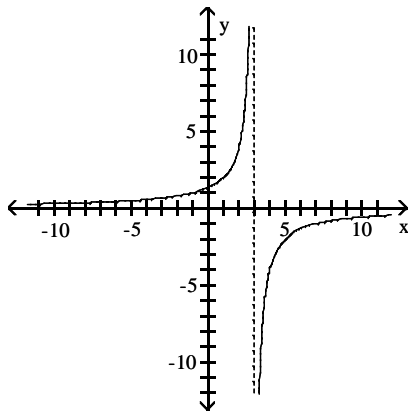
D) no horizontal asymptote

Graph the rational function.

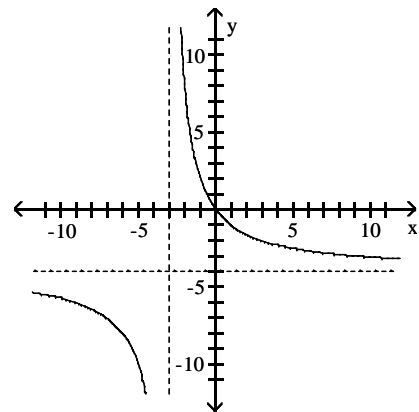
13) $f(x) = \frac{-4x}{x - 3}$



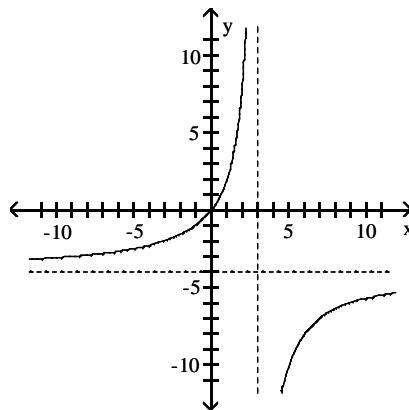
A)



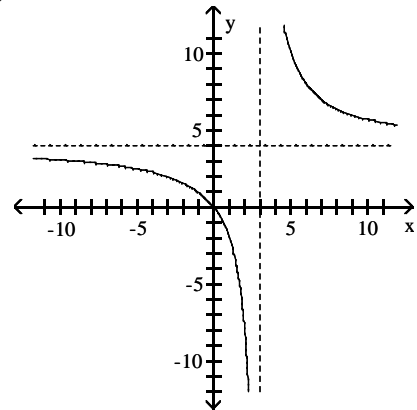
B)



C)



D)



Find A, B, and C for the partial fraction decomposition.

$$14) \frac{2x+1}{(x+2)^3} = \frac{A}{x+2} + \frac{B}{(x+2)^2} + \frac{C}{(x+2)^3}$$

A) $A = 0, B = 2, C = -3$

C) $A = 0, B = -3, C = 2$

B) $A = 0, B = 3, C = -2$

D) $A = 0, B = -2, C = 3$

Decompose into partial fractions.

$$15) \frac{15x-52}{x^2-7x+12}$$

A) $\frac{7}{x-3} + \frac{8}{x-4}$

B) $\frac{1}{x-3} + \frac{1}{x-4}$

C) $\frac{8}{x-3} + \frac{7}{x-4}$

D) $\frac{7}{x+3} + \frac{8}{x+4}$

$$16) \frac{14x^2-35x+11}{(x-4)(x^2+3)}$$

A) $\frac{9x+1}{x^2+3} + \frac{5}{x-4}$

B) $\frac{9x-1}{x^2+3} - \frac{5}{x-4}$

C) $-\frac{9x+1}{x^2+3} + \frac{5}{x-4}$

D) $\frac{9x+5}{x^2+3} + \frac{1}{x-4}$

$0 \leq t < \frac{\pi}{2}$ and $\sin t$ is given. Find $\cos t$.

17) $\sin t = \frac{1}{4}$

A) $\frac{\sqrt{15}}{15}$

B) $\frac{4\sqrt{15}}{15}$

C) 4

D) $\frac{\sqrt{15}}{4}$

Use periodic properties of the trigonometric functions to find the exact value of the expression.

18) $\sin \frac{11\pi}{3}$

A) -1

B) $-\frac{1}{2}$

C) $\frac{\sqrt{3}}{2}$

D) $-\frac{\sqrt{3}}{2}$

Determine the amplitude or period as requested.

19) Amplitude of $y = -\frac{1}{3} \sin x$

A) $\frac{\pi}{3}$

B) 3

C) $\frac{1}{3}$

D) $-\frac{1}{3}$

20) Period of $y = \sin 3x$

A) 3

B) 1

C) 2π

D) $\frac{2\pi}{3}$

Determine the phase shift of the function.

21) $y = 4 \sin (4x - \frac{\pi}{2})$

A) $\frac{\pi}{8}$ units to the right

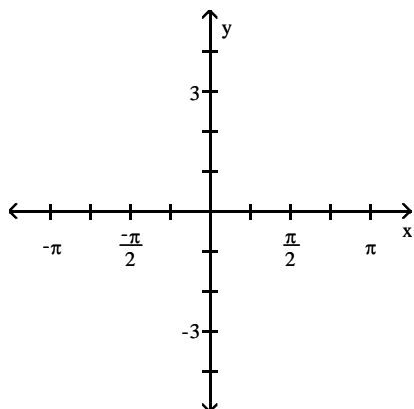
B) $\frac{\pi}{2}$ units to the left

C) 4π units down

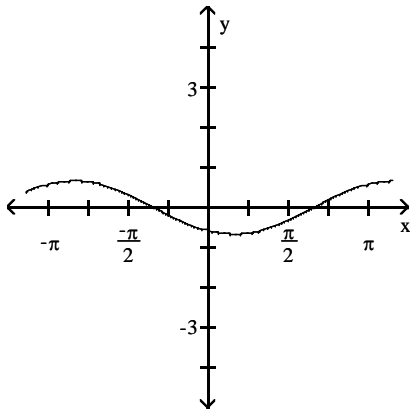
D) 4π units up

Graph the function.

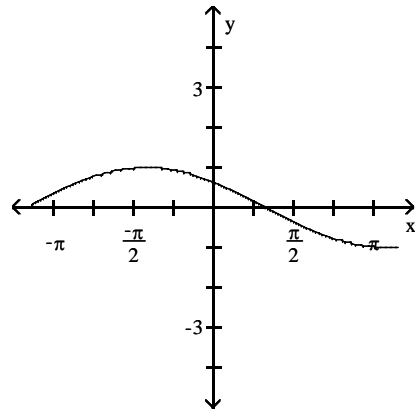
22) $y = -\frac{2}{3} \sin (x + \frac{\pi}{3})$



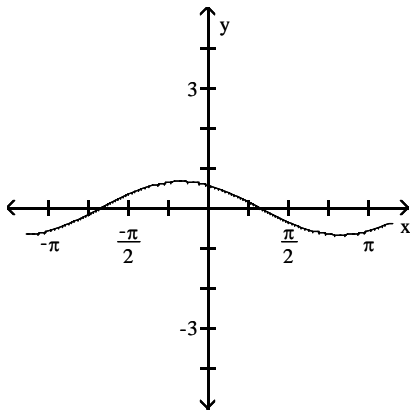
A)



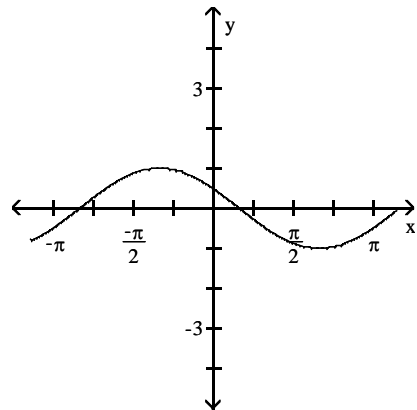
B)



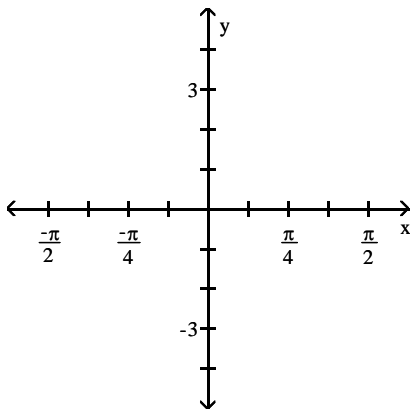
C)



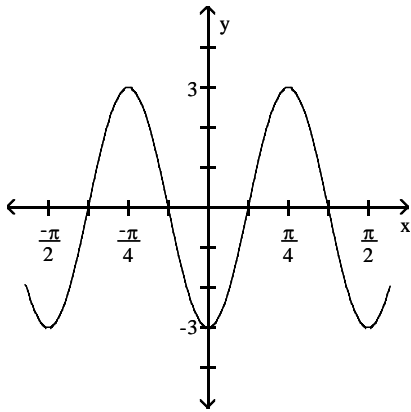
D)



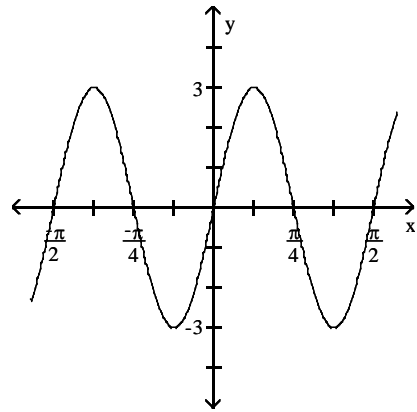
23) $y = 3 \cos(4x - \pi)$



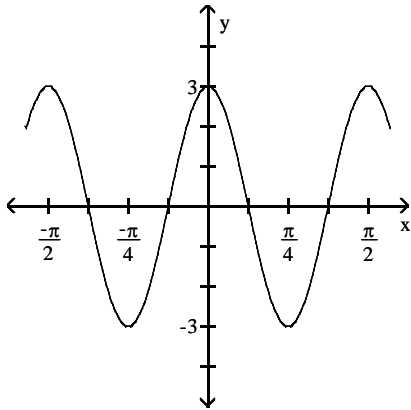
A)



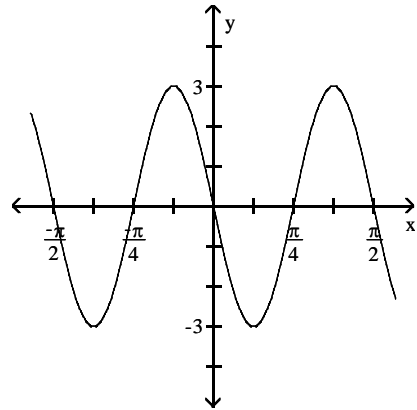
B)



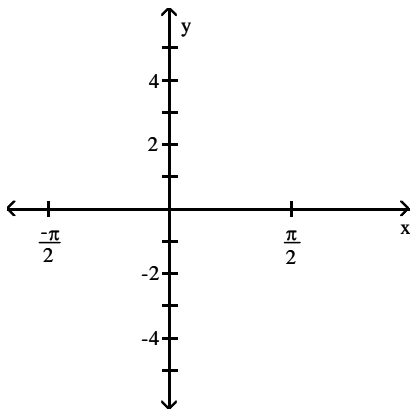
C)



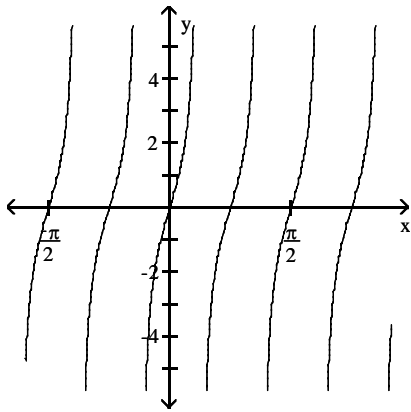
D)



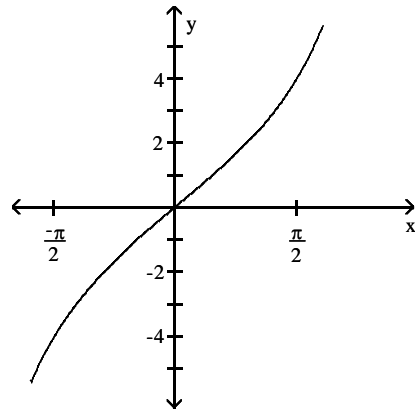
24) $y = 2 \tan 4x$



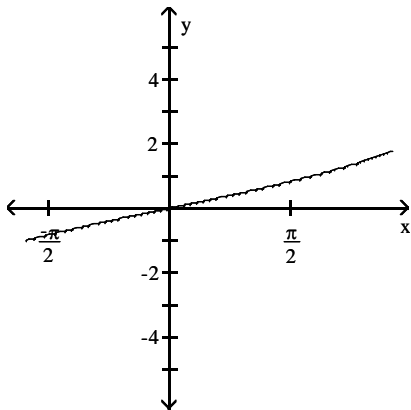
A)



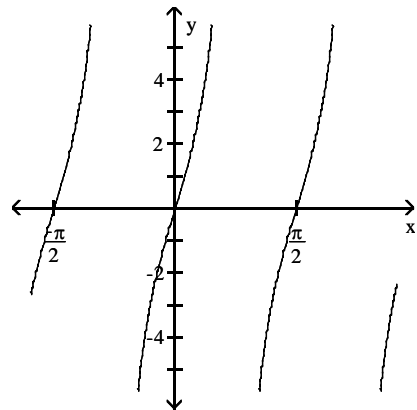
B)



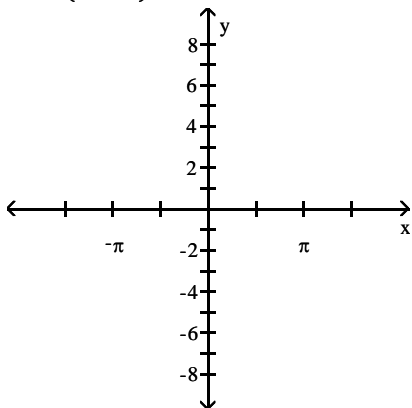
C)



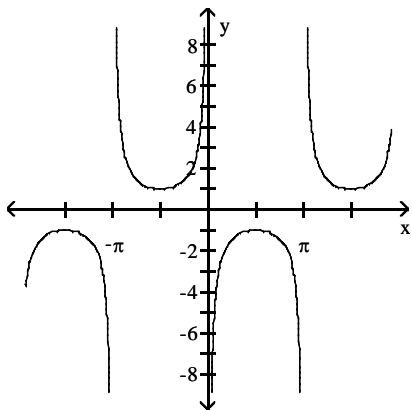
D)



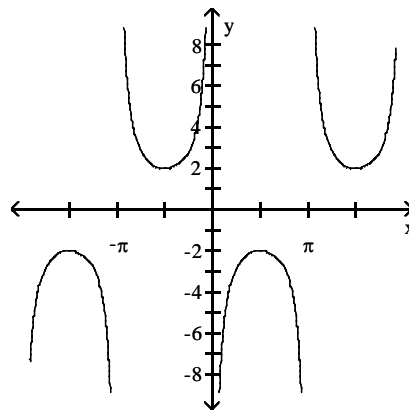
25) $y = 2 \sec\left(x + \frac{\pi}{2}\right)$



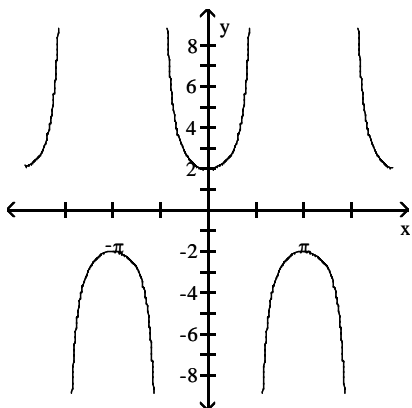
A)



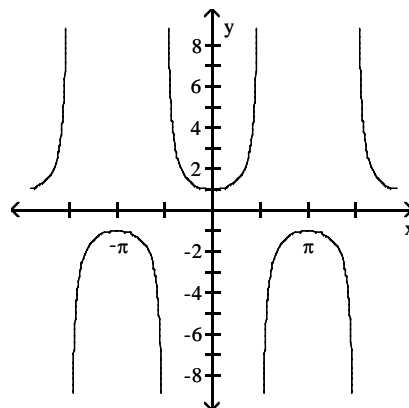
B)



C)



D)



Find the exact value of the expression.

$$26) \sin^{-1} \frac{\sqrt{3}}{2}$$

A) $\frac{\pi}{4}$

B) $\frac{3\pi}{4}$

C) $\frac{\pi}{3}$

D) $\frac{2\pi}{3}$

$$27) \cos^{-1} \left[-\frac{\sqrt{2}}{2} \right]$$

A) $\frac{\pi}{4}$

B) $\frac{-\pi}{4}$

C) $\frac{3\pi}{4}$

D) $\frac{-3\pi}{4}$

Find the exact value of the expression, if possible. Do not use a calculator.

$$28) \sin^{-1} \left[\sin \left(\frac{6\pi}{7} \right) \right]$$

A) $\frac{7}{\pi}$

B) $\frac{7}{6\pi}$

C) $\frac{\pi}{7}$

D) $\frac{6\pi}{7}$

Use a sketch to find the exact value of the expression.

$$29) \cos\left(\tan^{-1} \frac{5}{8}\right)$$

A) $\frac{5}{8}$

B) $\frac{8}{89}$

C) $\frac{8\sqrt{89}}{89}$

D) $\frac{\sqrt{89}}{8}$

Use a right triangle to write the expression as an algebraic expression. Assume that x is positive and in the domain of the given inverse trigonometric function.

$$30) \sin\left(\tan^{-1} \frac{x}{\sqrt{5}}\right)$$

A) $\frac{x\sqrt{x^2-5}}{x^2-5}$

B) $x\sqrt{x^2+5}$

C) $\frac{x\sqrt{x^2+5}}{x^2+5}$

D) $\frac{\sqrt{x^2+5}}{x^2+5}$

Answer Key

Testname: PRECAL REVIEW 1

- 1) B
- 2) A
- 3) C
- 4) D
- 5) B
- 6) D
- 7) B
- 8) C
- 9) C
- 10) D
- 11) C
- 12) A
- 13) C
- 14) A
- 15) A
- 16) A
- 17) D
- 18) D
- 19) C
- 20) D
- 21) A
- 22) A
- 23) A
- 24) A
- 25) B
- 26) C
- 27) C
- 28) C
- 29) C
- 30) C