

Summer Work 2020

Date _____

The following summer packet will review prerequisite skills for entering into Calculus at the College Preparatory level. We recommend completing the packet two weeks before the start of school so that it is fresh in your mind. The two main focuses are Function Notation and Trigonometric Ratios/Exact Values. The packets are due the first day of class and will count as homework grade(s).

It is recommended that students who do not already have a TI-84 Graphing Utility calculator purchase one, although students will have access to a partial class set in school. TI-84 (Color Editions) are the preferred edition if you are purchasing one. Again, this is not required and only suggested. It will be handy in future college math courses as well.

Identify the domain and range of each.

1) $y = 3\sqrt{x-4}$

2) $y = \sqrt{x} + 1$

3) $y = \sqrt[3]{x}$

4) $y = \sqrt[3]{x-1}$

Evaluate each function.

5) $g(n) = -2n^3 - 4$; Find $g(-3)$

6) $g(n) = 5^{3n}$; Find $g(-1)$

7) $f(n) = |n + 3| - 1$; Find $f(-1)$

8) $g(a) = 3a + 1$; Find $g(-8)$

9) $w(x) = -2|2x - 3|$; Find $w(5)$

10) $w(a) = a^2 - a$; Find $w(-7)$

11) $f(x) = |x| + 1$; Find $f(-8)$

12) $h(x) = -3 \cdot 2^x$; Find $h(1)$

Perform the indicated operation.

13) $g(a) = 4a - 1$
 $h(a) = a^2 + 5$
Find $\left(\frac{g}{h}\right)(a)$

14) $f(t) = 3t - 2$
 $g(t) = t^2 - t$
Find $f(t) \cdot g(t)$

15) $h(n) = n + 4$
 $g(n) = n^3 + n$
Find $h(n) \div g(n)$

16) $f(x) = x - 4$
 $g(x) = -x^2 - 3$
Find $(f \cdot g)(x)$

17) $f(x) = 4x - 2$
 $g(x) = 3x + 1$
Find $(f \circ g)(x)$

18) $g(x) = x^3 - 3x$
 $h(x) = 3x + 1$
Find $(g \circ h)(x)$

19) $f(x) = -3x^2 + 3x$
 $g(x) = 3x - 1$
Find $f(g(x))$

20) $g(n) = 4n - 4$
 $f(n) = n^3 - 3 + n$
Find $g(f(n))$

21) $g(x) = 3x - 3$
 $f(x) = 2x^3 - 5x$
Find $(g + f)(x)$

22) $h(a) = -3a^3 - a^2$
 $g(a) = -a + 5$
Find $(h - g)(a)$

Write the slope-intercept form of the equation of the line through the given points.

23) through: $(1, 3)$ and $(-4, -2)$

24) through: $(2, 2)$ and $(-1, 2)$

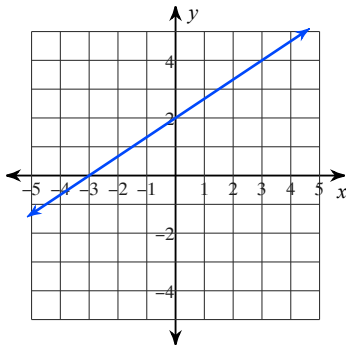
Write the slope-intercept form of the equation of the line described.

25) through: $(-4, -5)$, parallel to $y = \frac{3}{4}x - 1$

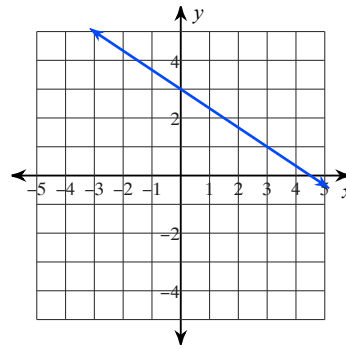
26) through: $(-2, -5)$, perp. to $y = -\frac{1}{3}x$

Write the slope-intercept form of the equation of each line.

27)

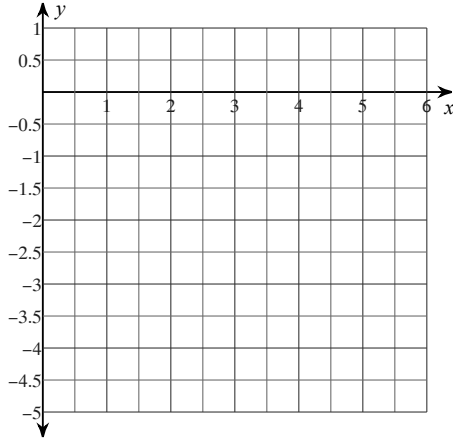


28)

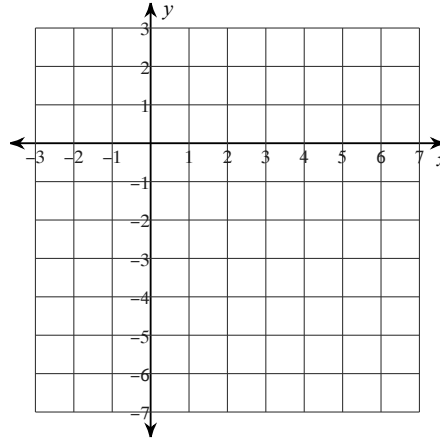


Sketch the graph of each function.

29) $y = x^2 - 4x$

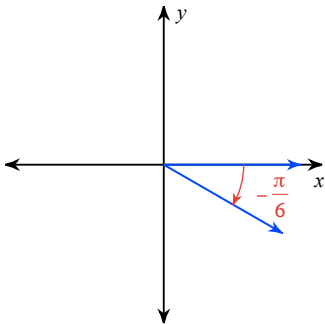


30) $y = -2x^2 + 4x$

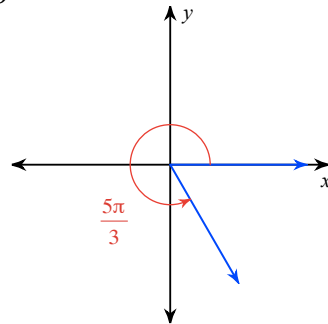


Find the exact value of each trigonometric function.

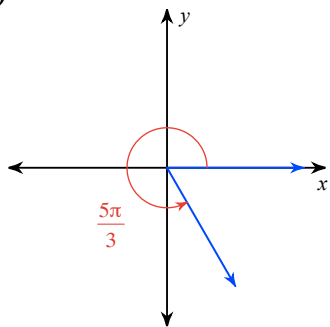
31) $\sec \theta$



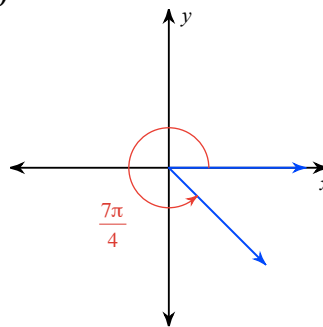
32) $\tan \theta$



33) $\cot \theta$



34) $\cos \theta$



35) $\sin \frac{7\pi}{2}$

36) $\cos \frac{3\pi}{4}$

37) $\tan \frac{\pi}{4}$

38) $\cos \pi$

Factor each completely.

39) $x^4 + 3x^3$

40) $m^2 - 3m - 40$

41) $r^2 + 10r + 24$

42) $a^2 - 100$

43) $n^2 + 12n + 35$

44) $5n^2 - 25n - 180$

Solve each equation by factoring.

45) $v^2 - 10v = -21$

46) $n^2 + 3n = 40$

47) $a^2 + 21 = 10a$

48) $x^2 = x$

49) $x^2 = 8 + 2x$

50) $r^2 = -40 + 13r$

Answers to Summer Work 2020

1) Domain: $x \geq 4$
Range: $y \geq 0$

2) Domain: $x \geq 0$
Range: $y \geq 1$

3) Domain: { All real numbers. }
Range: { All real numbers. }

4) Domain: { All real numbers. }
Range: { All real numbers. }

5) 50

6) $\frac{1}{125}$

7) 1

8) -23

9) -14

10) 56

11) 9

12) -6

13) $\frac{4a-1}{a^2+5}$

14) $3t^3 - 5t^2 + 2t$

15) $\frac{n+4}{n^3+n}$

16) $-x^3 + 4x^2 - 3x + 12$

17) $12x + 2$

18) $27x^3 + 27x^2 - 2$

19) $-27x^2 + 27x - 6$

20) $4n^3 + 4n - 16$

21) $2x^3 - 2x - 3$

22) $-3a^3 - a^2 + a - 5$

23) $y = x + 2$

24) $y = 2$

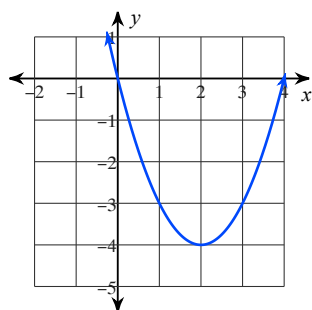
25) $y = \frac{3}{4}x - 2$

26) $y = 3x + 1$

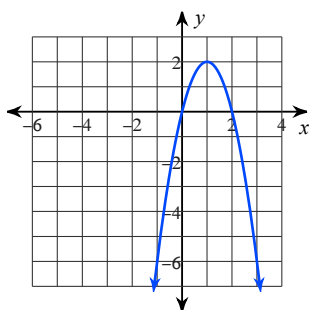
27) $y = \frac{2}{3}x + 2$

28) $y = -\frac{2}{3}x + 3$

29)



30)



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

32) $-\sqrt{3}$

33) $-\frac{\sqrt{3}}{3}$

34) $\frac{\sqrt{2}}{2}$

35) -1

36) $-\frac{\sqrt{2}}{2}$

37) 1

38) -1

39) $x^3(x+3)$

40) $(m+5)(m-8)$

41) $(r+4)(r+6)$

42) $(a-10)(a+10)$

43) $(n+7)(n+5)$

44) $5(n+4)(n-9)$

45) $\{7, 3\}$

46) $\{-8, 5\}$

47) $\{3, 7\}$

48) $\{1, 0\}$

49) $\{-2, 4\}$

50) $\{8, 5\}$