

## Summer Packet

Date \_\_\_\_\_ Period \_\_\_\_\_

**Solve each equation.**

1)  $x + 3(x + 5) = -33 - 2x$

2)  $17 + 6p = -5 + 8(-7 + 4p)$

3)  $8(1 - 4x) = 7x - 31$

4)  $30 + 2x = -6 + 5(x + 3)$

5)  $-7(v - 2) + 4 = 12 - 6v$

6)  $-38 + 8m = -2(5m - 8)$

**Solve each equation by factoring or using the quadratic formula.**

7)  $21v^2 + 9 = -66v$

8)  $11m^2 + 5 = 12m + 4m^2$

9)  $15n^2 - 20n = -8n$

10)  $3x^2 + 2x = -5x + 6$

$$11) 15x^2 + 7 = 7x^2 + 57x$$

$$12) 43x^2 + 3x - 9 = x^2$$

**Solve each equation.**

$$13) 36^{-x-1} = 216^{3x}$$

$$14) 81^{x-3} = 27$$

$$15) 64^x = 16$$

$$16) 125^{-3n-1} = \frac{1}{5}$$

**Solve each equation. Round your answers to the nearest thousandth.**

$$17) 4^{-7k} + 10 = 13$$

$$18) 20^{-5m} + 3 = 60$$

$$19) e^{-7k} + 7 = 93$$

$$20) -4 \cdot 3^{x-10} = -69$$

**Solve each equation.**

$$21) \log_{18}(-4p - 9) = \log_{18}(-3p)$$

$$22) \log_{20}(-5m) = \log_{20}(-4m + 4)$$

**Solve each equation. Remember to check for extraneous solutions.**

$$23) \sqrt{7r + 65} = r + 5$$

$$24) n - 4 = \sqrt{3n - 14}$$

$$25) \sqrt{\frac{n}{8}} = \sqrt{3n - 46}$$

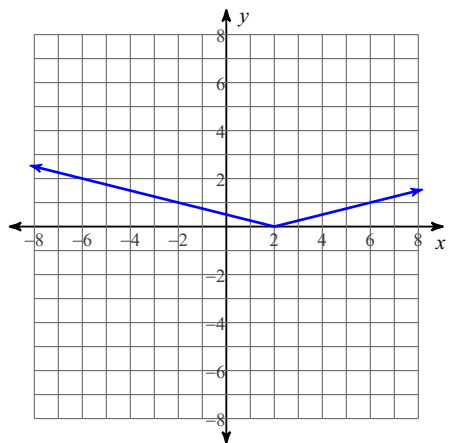
$$26) \sqrt{2p - 1} = \sqrt{7 - 2p}$$

$$27) x = \sqrt{-24 + 10x}$$

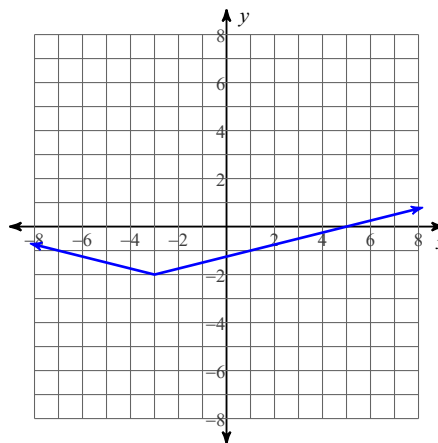
$$28) \sqrt{16 - 6p} = p$$

Each graph represents a relation. Determine which relation are functions. Then, determine the domain and range (use interval notation with parenthesis and/or brackets). State intervals for increasing/decreasing and positive/negative. Last, state left and right end behavior using limit notation.

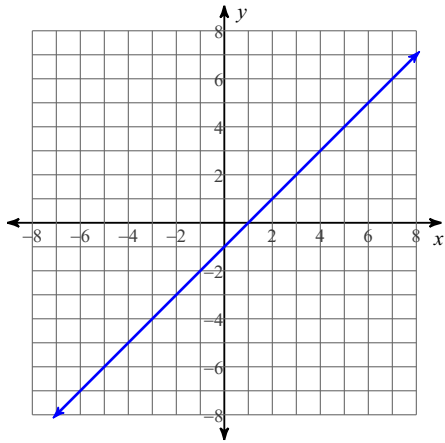
29)



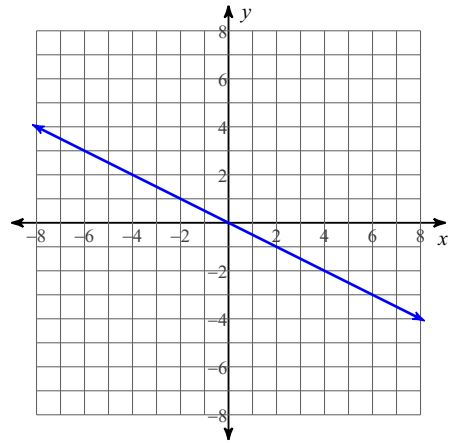
30)



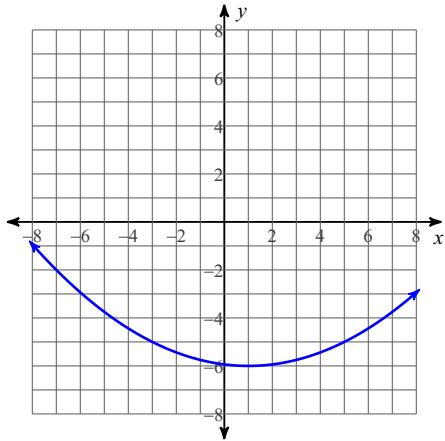
31)



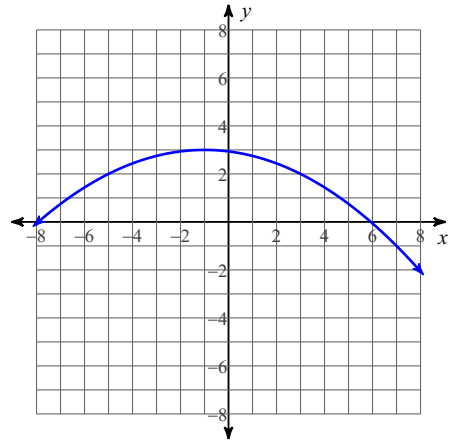
32)



33)



34)



**Perform the indicated operation.**

35)  $f(n) = n^2 - 5 + 2n$   
 $g(n) = 3n + 5$   
Find  $f(n) - g(n)$

36)  $h(n) = n^2 + 1$   
 $g(n) = n - 1$   
Find  $h(n) - g(n)$

37)  $f(a) = a - 3$   
 $g(a) = 3a^2 - 2a$   
Find  $f(a) + 4g(a)$

38)  $g(t) = t^2 - 3t$   
 $f(t) = 2t$   
Find  $3g(t) + 4f(t)$

39)  $g(x) = 2x + 1$   
 $h(x) = x^3 + 5$   
Find  $g(x) \cdot h(x)$

40)  $h(a) = a + 2$   
 $g(a) = 3a + 2$   
Find  $h(a) \cdot g(a)$

41)  $g(n) = -2n^2 + 5n$   
 $h(n) = 3n - 3$   
Find  $g(h(n))$

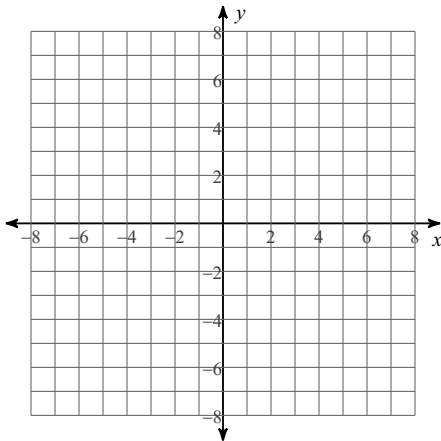
42)  $g(n) = n^2 + 5n$   
 $f(n) = -4n - 3$   
Find  $g(f(n))$

43)  $h(n) = -3n - 3$   
 $g(n) = n^3 + 5n^2$   
 Find  $h(g(n))$

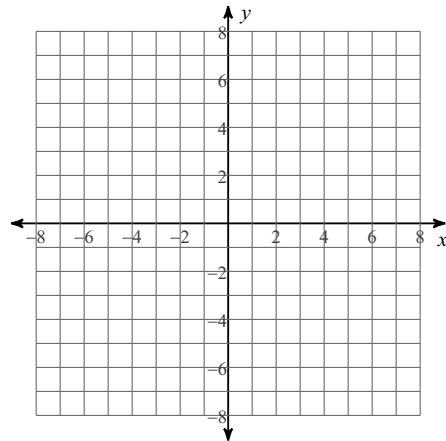
44)  $g(x) = 4x - 1$   
 $f(x) = 2x^3 - 2x^2$   
 Find  $g(f(x))$

Use your calculator. Sketch the graph of each function. Label the max and mins and zeroes of each function.

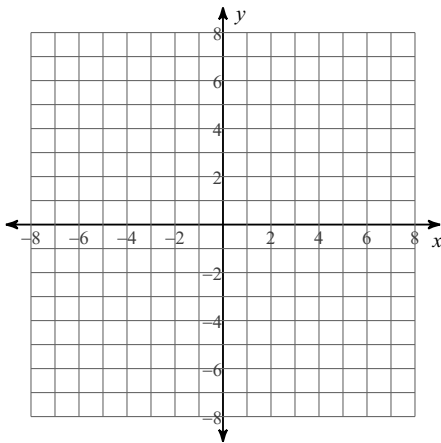
45)  $f(x) = -x^3 + 15x^2 - 72x + 115$



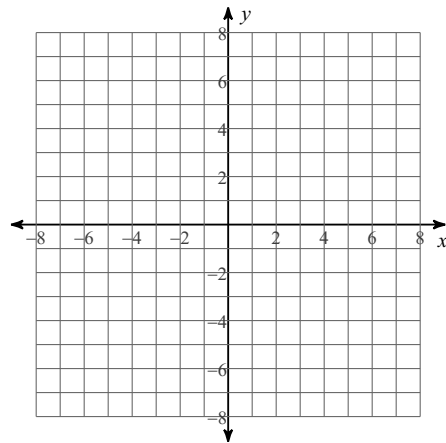
46)  $f(x) = -x^4 - x^3 + 3x^2 - 3$



47)  $f(x) = x^4 - x^2 - 4$

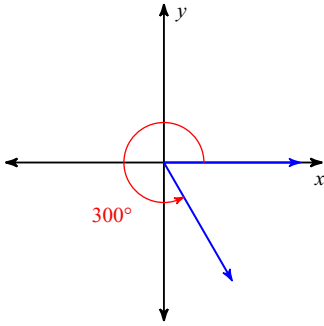


48)  $f(x) = x^3 + 14x^2 + 60x + 78$

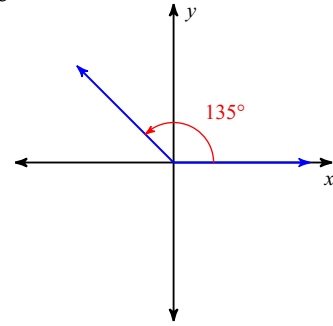


Find the exact value of each trigonometric function.

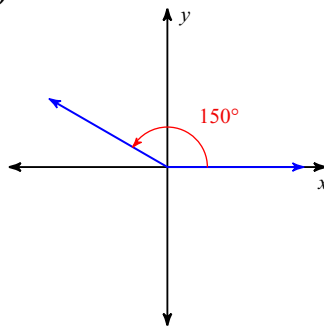
49)  $\tan \theta$



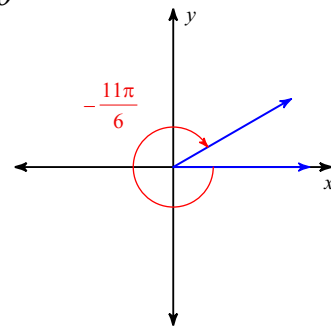
50)  $\cos \theta$



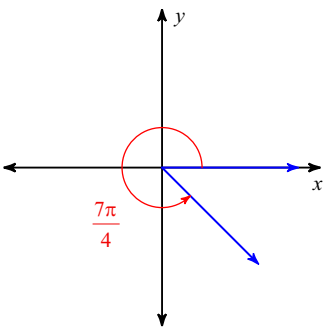
51)  $\cos \theta$



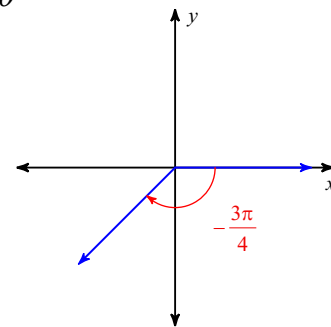
52)  $\sin \theta$



53)  $\sin \theta$



54)  $\tan \theta$





## Answers to Summer Packet (ID: 1)

1)  $\{-8\}$

5)  $\{6\}$

9)  $\left\{\frac{4}{5}, 0\right\}$

13)  $\left\{-\frac{2}{11}\right\}$

17)  $-0.113$

21)  $\{-9\}$

25)  $\{16\}$

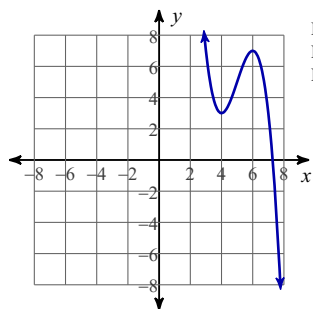
29) Domain:  $(-\infty, \infty)$   
Range:  $[0, \infty)$

33) Domain:  $(-\infty, \infty)$   
Range:  $[-6, \infty)$

37)  $12a^2 - 7a - 3$

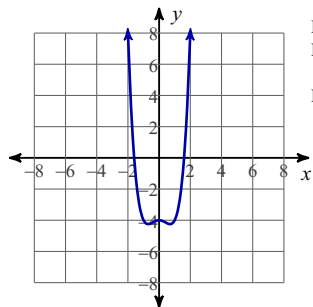
41)  $-18n^2 + 51n - 33$

45)



Real Zeros: 7.3  
Minima: (4, 3)  
Maxima: (6, 7)

47)



Real Zeros:  $-1.6, 1.6$   
Minima:  $(0.7, -4.3)$   
Maxima:  $(0, -4)$

49)  $-\sqrt{3}$

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

2)  $\{3\}$

6)  $\{3\}$

10)  $\left\{\frac{2}{3}, -3\right\}$

14)  $\left\{\frac{15}{4}\right\}$

18)  $-0.270$

22)  $\{-4\}$

26)  $\{2\}$

30) Domain:  $(-\infty, \infty)$   
Range:  $[-2, \infty)$

34) Domain:  $(-\infty, \infty)$   
Range:  $(-\infty, 3]$

38)  $3t^2 - t$

42)  $16n^2 + 4n - 6$

3)  $\{1\}$

7)  $\left\{-\frac{1}{7}, -3\right\}$

11)  $\left\{\frac{1}{8}, 7\right\}$

15)  $\left\{\frac{2}{3}\right\}$

19)  $-0.636$

23)  $\{5\}$

27)  $\{6, 4\}$

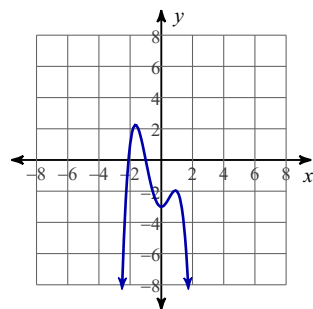
31) Domain:  $(-\infty, \infty)$   
Range:  $(-\infty, \infty)$

35)  $n^2 - n - 10$

39)  $2x^4 + x^3 + 10x + 5$

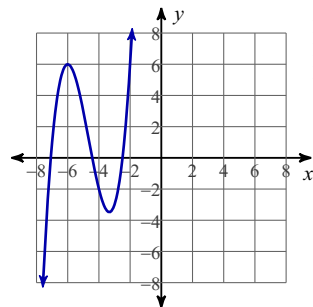
43)  $-3n^3 - 15n^2 - 3$

46)



Real Zeros:  $-2.1, -1$   
Minima:  $(0, -3)$   
Maxima:  $(-1.7, 2.2)$   
 $(0.9, -2)$

48)



Real Zeros:  $-7.1, -4.4, -2.5$   
Minima:  $(-3.3, -3.5)$   
Maxima:  $(-6, 6)$

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

52)  $\frac{1}{2}$

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

54) 1