Advanced Math Name_____ ID: 1

# Calculus Summer Assignment

Date_____ Period____

**Directions: This assignment is for students who have completed Advanced Math and are taking Calculus in the 2018-2019 school year.**

**1. Did you read the instructions?**

**2. What math class are you taking in the 2018-2019 school year?**

**Factor each completely.**

1) $2v^2 - 7v - 15$

2) $3x^3 - 8x^2 - 16x$

3) $42m^3 - 300m^2 + 288m$

4) $15x^3 + 35x^2$

5) $72uv + 84u + 60v^2 + 70v$

6) $16xy - 14x + 40y - 35$

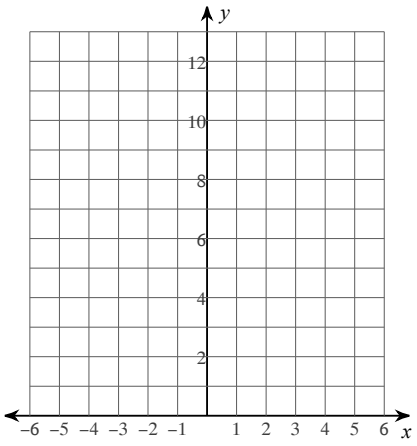
**Evaluate each function.**

7) $h(x) = -\left|-3x + 1\right| - 1$; Find $h(10)$

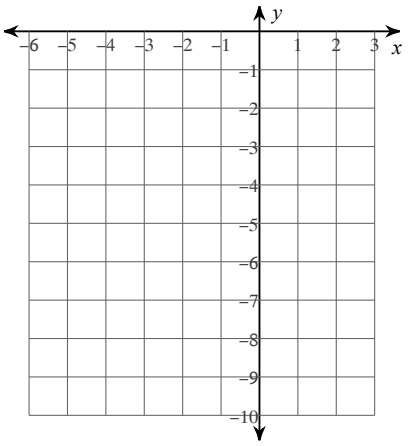
8) $w(a) = -3a^2 + 2$; Find $w(8)$

**Sketch the graph of each function.**

9) $y = 2x^2 - 8x + 12$




10) $y = -2x^2 - 16x - 33$




**State the number of roots for each equation. Then factor each and find all roots. One root has been given.**

11) $x^4 + 2x^3 - 4x^2 + 8x - 32 = 0$; 2

12) $x^3 + 9x^2 + 24x + 20 = 0$; −5

13) $x^4 - 10x^3 + 27x^2 - 20x + 50 = 0;\ 5$

14) $x^3 - 8x^2 + 17x - 10 = 0;\ 2$

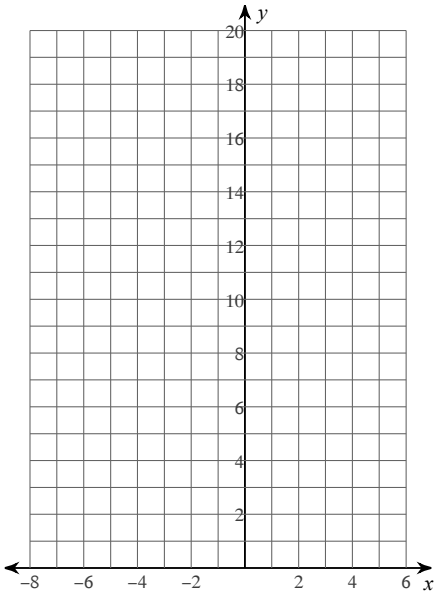
**Identify the holes, vertical asymptotes, x-intercepts, and horizontal asymptote of each.**

15) $f(x) = \dfrac{x^3 - x}{-3x^2 - 9x - 6}$

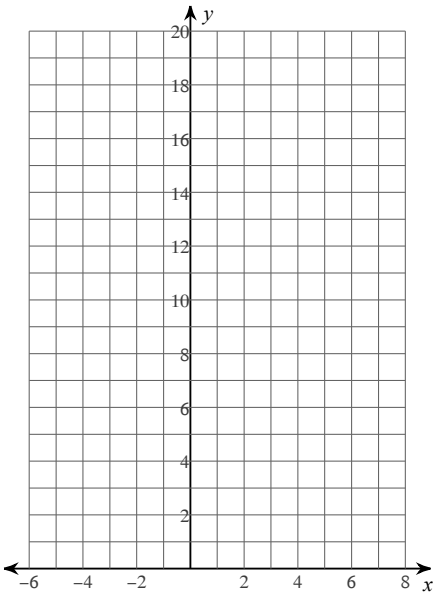
16) $f(x) = \dfrac{2x^2 + 6x}{x^2 + x - 6}$

**Sketch the graph of each function.**

17) $y = 2^{x+1} + 2$




18) $y = \left(\dfrac{1}{3}\right)^{x-1} + 1$



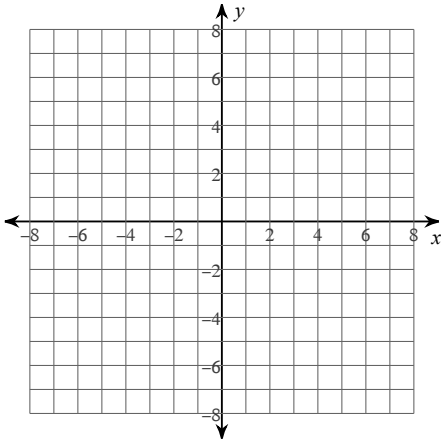
**Solve each equation.**

19) $2^{3n-1} = \frac{1}{4}$

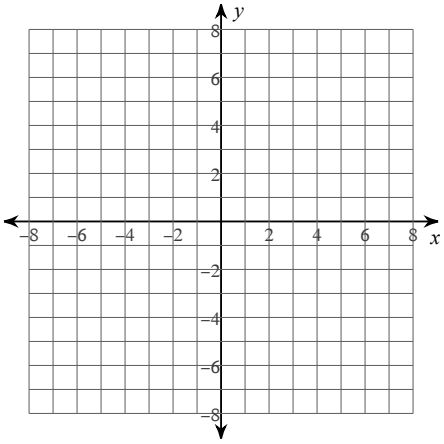
20) $16^{-2p-2} = 64^{2p}$

**Identify the domain and range of each. Then sketch the graph.**

21) $y = \log_3 (x + 6) + 4$




22) $y = \log_4 (x - 1) - 4$




**Find the inverse of each function.**

23) $y = \log_4 (-2x)$

24) $y = \log_5 x - 8$

**Solve each equation.**

25) $-9\log_9 -5p = -9$

26) $7 + \log_{11}(k - 9) = 8$

**Find a positive and a negative coterminal angle for each given angle.**

27) $-\frac{11\pi}{6}$

28) $\frac{19\pi}{18}$

**Find the exact value of each trigonometric function. DO NOT USE A CALCULATOR.**

29) cot 120°

30) cot 210°

31) $\cot\frac{7\pi}{6}$

32) cos −300°

33) $\tan -\frac{5\pi}{3}$

34) $\sin \pi$

35) $\csc -150°$

36) $\cos 270°$

37) $\cot 135°$

38) $\cot -240°$

39) $\csc \frac{5\pi}{3}$

40) $\cos 30°$

**Solve each equation for** $0 \le \theta < 2\pi$**.**

41) $-1 + 6\sin\theta = 2$

42) $-5 = -4 - 2\sin\theta$

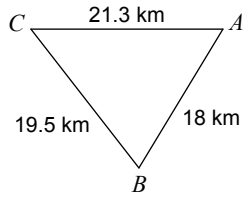
43) $-2 = -4 + 4\sin\theta$

44) $\frac{21}{4} = 5 + \frac{1}{2} \cdot \sin\theta$

**Solve each triangle. Round your answers to the nearest tenth.**

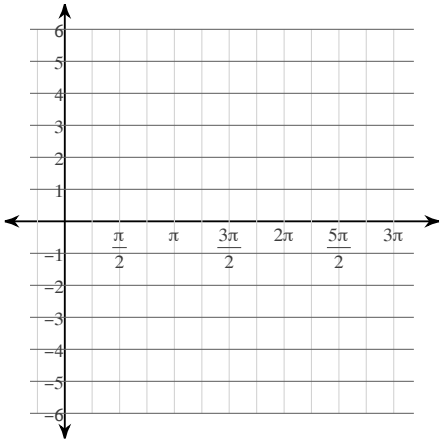
45) $m\angle A = 68°$, $a = 17$, $c = 10$

46)

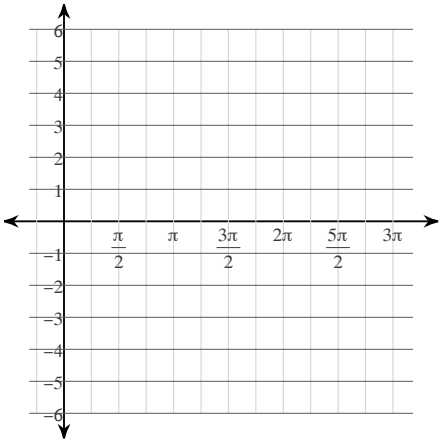


**Graph each function using radians.**

47) $y = 2\sin\theta + 2$




48) $y = 4\cos\theta + 1$




**Find the value of each limit.**

49) $\lim_{x\to -1}\left(x^3 - x^2 - 4\right)$

50) $\lim_{x\to 2}\left(-2x^2 + 12x - 13\right)$

51) $\lim_{x \to 2} 2$

52) $\lim_{x \to 0} (2x + 4)$

53) $\lim_{x \to 2} \dfrac{x^2 - 3x + 2}{x - 2}$

54) $\lim_{x \to 3} \dfrac{x - 3}{x^2 - 5x + 6}$

55) $\lim_{x \to 0^-} f(x),\ f(x) = \begin{cases} -2, & x < 0 \\ -x^2 + 4x - 5, & x \geq 0 \end{cases}$

56) $\lim_{x \to -1^-} \dfrac{2|x + 1|}{x + 1}$