Name:_____

Honors Calculus
Summer Work 2019-2020

- The following packet is a comprehensive review of all chapters taught in the Pre-Calculus and Algebra 3 courses.
- This packet is DUE on the first day of class; there are no extensions. If it is submitted late, 10 points per day will be deducted.
- If you have any questions, you can email me at ababiasz@charterarts.org.
- If you lose the packet, you can find a copy on the school website at www.charterarts.org

Welcome to Calculus Honors, and have a great summer!

- Mr. Babiasz

Calculus Honors Summer Work

Name_____

Date_____ Period____

Solve each equation. Remember to check for extraneous solutions when appropriate.

1) $3|5x-3|+3=-96$

2) $v^2+6v-45=-5$

3) $-38.45=2.5(4.5v-8)+7.5(v+6.29)$

4) $2^{2-x}=2^6$

5) $625^r=\frac{1}{25}$

6) $16^{1.5b}=11$

7) $\ln(3k-1)=\ln(3-k)$

8) $\log(10 - x) = \log x$

9) $\log(n - 1) = \log(n^2 - 31)$

10) $8 + \log 10p = 7$

11) $\ln -2x + \ln 2 = \ln 36$

12) $\ln 2x^2 - \ln 8 = 2$

13) $n^2 - 7n + 7 = -7 + 2n$

14) $10x^2 - x = 2$

15) $5n^2 - 8 = -23$

16) $10n^2 - 2 = -6n$

17) $\sqrt{3n - 21} = \sqrt{2n - 11}$

18) $a = \sqrt{8a}$

19) $3 = \sqrt{4n + 17} - n$

20) $\sqrt{4 - x} + 4 = \sqrt{5x - 4}$

21) $1 = \frac{1}{2} - \frac{b - 2}{2b}$

22) $216 = (3p)^{\frac{3}{2}}$

23) $2(m - 13)^{\frac{3}{2}} = 2000$

Solve each equation for $0 \leq \theta < 360$.

24) $\tan \theta = -1$

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

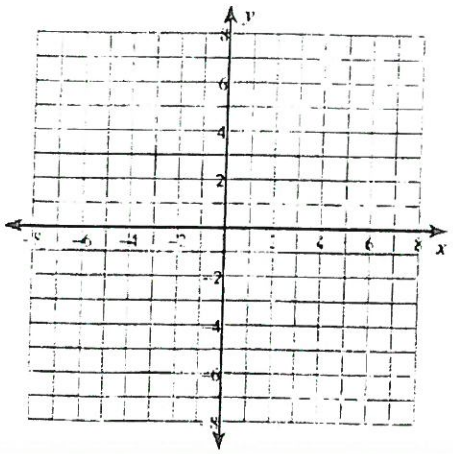
25) $\cos\theta = \dfrac{2\sqrt{3}}{3}$

State the possible rational zeros for each function. Then factor each and find all zeros.

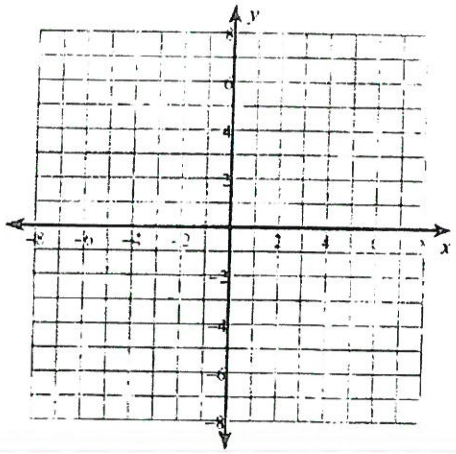
26) $f(x) = x^3 - 7x^2 - 64x - 20$

Sketch the graph of each function. Approximate the relative minima and relative maxima to the nearest tenth.

27) $f(x) = -x^4 + 2x^2 + x + 4$



28) $f(x) = x^3 - 3x^2 + 2$



Describe the end behavior of each function.

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

Simplify each expression.

30) $\dfrac{\dfrac{25}{4}}{\dfrac{4}{x^2}}$

31) $\dfrac{2}{\dfrac{4}{x-4} + \dfrac{x-4}{4}}$

32) $\dfrac{\dfrac{x^2}{16} - \dfrac{9}{x}}{\dfrac{x}{4} - \dfrac{x}{3}}$

Identify the points of discontinuity, holes, vertical asymptotes, x-intercepts, horizontal asymptote, and domain of each.

33) $f(x) = \dfrac{x^3 + 3x^2 - 4x}{-4x^3 + 16x}$

34) $f(x) = \dfrac{1}{x-2}$

35) $f(x) = \dfrac{x^3 - 16x}{-3x^2 - 6x + 9}$

36) $f(x) = \dfrac{x-1}{x+2}$

Solve the following polynomial inequalities and graph their solution set on a number line. Express the solution set in interval notation.

37) $x^3 + 3x^2 - x - 3 > 0$

.

38) $\dfrac{x}{x+2} < 2$

Convert each degree measure into radians.

39) -290°

Convert each radian measure into degrees.

40) $\frac{5\pi}{6}$

Find a coterminal angle between 0 and 2π for each given angle.

41) $-\frac{23\pi}{15}$

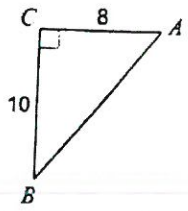
Find the exact value of each trigonometric function.

42) $\sin 945°$

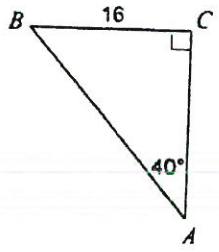
43) $\csc 360°$

Solve each triangle. Round answers to the nearest tenth.

44)



45)



Find the value of the trig function indicated.

46) Find sec θ if cot $= 8 / 15$;
θ is in Quadrant III

47) Find csc θ if $\cos \theta = \frac{3}{5}$
θ is in Quadrant IV

Use the angle sum identity to find the exact value of each.

48) cos 165°

Use the angle difference identity to find the exact value of each.

49) $\sin \frac{7\pi}{12}$

Use a double-angle identity to find the exact value of each expression.

50) $\cos \theta = -\frac{4}{5}$ and $90° < \theta < 180°$
Find tan 2θ

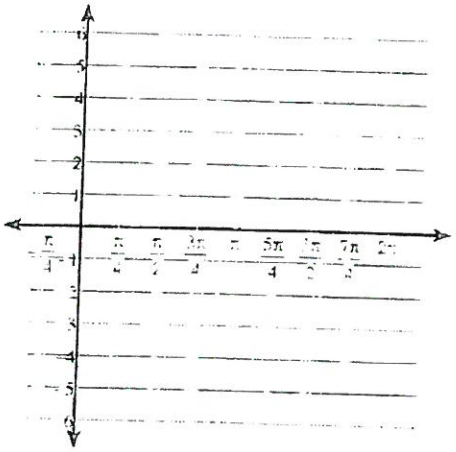
Use a half-angle identity to find the exact value of each expression.

51) $\cos\theta = -\frac{4}{5}$ and $180° < \theta < 270°$

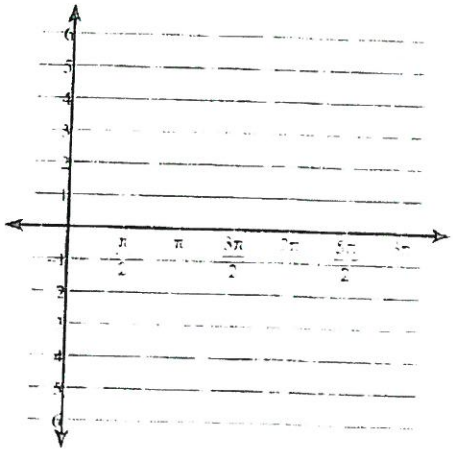
Find $\sin\frac{\theta}{2}$

Graph each function using radians.

52) $y = \sin 2\theta - 2$



53) $y = 3\sec\theta$



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

54) $m\angle B = 38°$, $a = 28$ m, $b = 4$ m

55) $m\angle B = 122°$, $m\angle A = 24°$, $a = 24$ ft

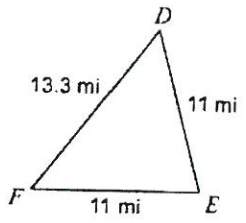
56) $m\angle B = 47°$, $a = 33$ cm, $b = 32$ cm

57) $a = 18$ mi, $m\angle B = 109°$, $c = 28$ mi

58) $a = 12$ yd, $b = 10$ yd, $c = 19$ yd

Find the area of each triangle to the nearest tenth.

59)



Verify the following identitiy.

60) $\cos(x + y) + \cos(x - y) = 2 \cos x \cos y$