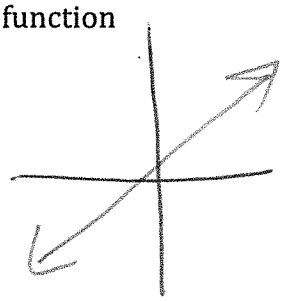
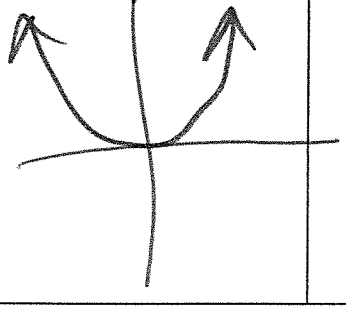
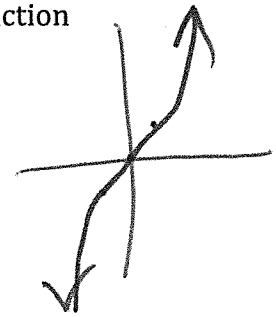
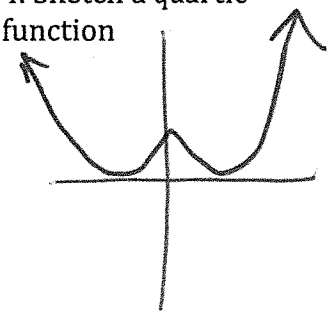
Name: _____ Hour: _____ **Algebra 2 Semester 2 Review**

Part 1: Polynomials

TALLEY

1. Sketch a linear function	2. Sketch a quadratic function	3. Sketch a cubic function	4. Sketch a quartic function
			

5. Identify the end behavior for the following functions.

a) $4x^3 + 2x^2 - 1$

$as\ x \to +\infty, f(x) \to$ ∞

$as\ x \to -\infty, f(x) \to$ $-\infty$

b) $-5x^2 + 6x - 7$

$as\ x \to +\infty, f(x) \to$ $-\infty$

$as\ x \to -\infty, f(x) \to$ $-\infty$

c) $3x^4 - 7x + 8$

$as\ x \to +\infty, f(x) \to$ ∞

$as\ x \to -\infty, f(x) \to$ ∞

d) $-2x^5 + 5x^3 - x7$

$as\ x \to +\infty, f(x) \to$ $-\infty$

$as\ x \to -\infty, f(x) \to$ ∞

Simplify the following expressions:

6. $(2x^4 - 7x^3 + 4x - 7) + (2x^2 - 4x + 8)$

$2x^4 - 7x^3 + 2x^2 + 1$

7. $(-4x^3 + 7x - 6) - (7x^4 + 3x^3 - 2x - 4)$

$-7x^4 - 7x^3 + 9x - 2$

8. $(3x^3 + 2x + 7)(x^2 - 4)$

$3x^5 - 10x^3 + 7x^2 - 8x - 28$

9. $(x + 2)(2x^2 + 5x + 3)$

$2x^3 + 9x^2 + 13x + 6$

10. $8x^4 - 3x^2(2x^3 - 5x)$

$-6x^5 + 8x^4 + 15x^3$

11. $2x^2 - 5x^3(3x^4 + 4x)$

$-15x^7 - 20x^4 + 2x^2$

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Find the quotient and explain whether the divisor is a factor of the dividend.

12. $(x^4 - 4x^3 - 3x^2 + 14x - 8) \div (x - 3)$

$x^3 - x^2 - 6x - 4 - \frac{20}{x-3}$

NO

13. $(x^3 - 4x^2 + 3x + 2) \div (x + 2)$

$x^2 - 6x + 15 - \frac{28}{(x+2)}$

Completely factor AND solve the following polynomials.

14. $x^2 + 6x + 8 = 0$

$x = -4$
$x = -2$

15. $6x^2 + x - 2 = 0$

$x = -2/3$
$x = 1/2$

16. ~~$x^4 - 12x^2 + 27 = 0$~~

17. ~~$x^4 + 4x^2 + 3 = 0$~~

Simplify the following expressions.

18. $(x + 5)^2$

$x^2 + 10x + 25$

19. $(2x - 3)^2$

$4x^2 - 12x + 9$

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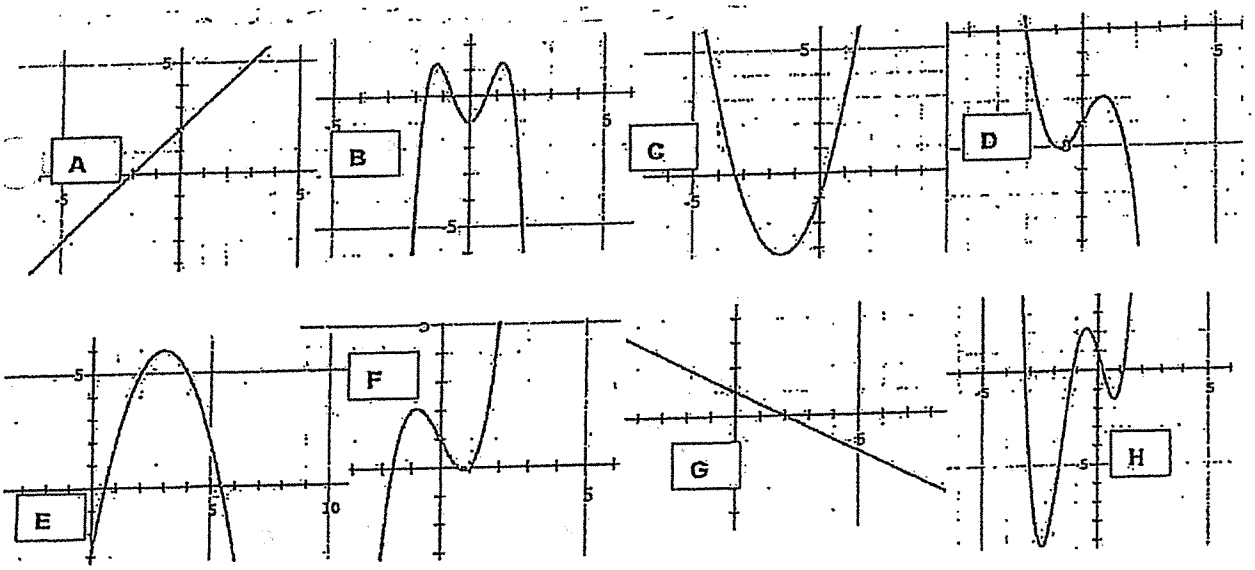
Classify each polynomial by degree and by number of terms.

20. $2x^3+3x - 4x^5 + 5x^2$ Quintic Poly

21. $5x^3 -2x^2 + 4x^2-3x + 2x^4$ Quintic Poly

22. $6x^2 - 5x^3$ Cubic binomial

Write the letter of the graphs that have the same *END BEHAVIOR* as the following functions.



23. $f(x) = 3x^5 + 4x^4 - 3x + 1$ A, F

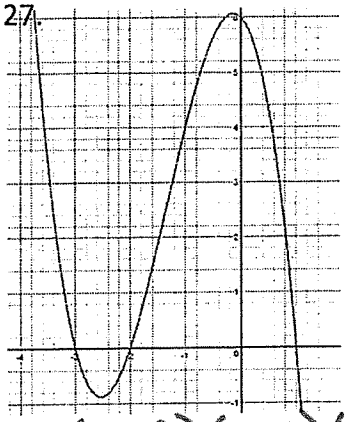
24. $f(x) = -x^3 + 2x - 1$ DG

25. $f(x) = -5x^4 - 3x^2 + 4x - 5$ B E

26. $f(x) = x^6 + 5x^4 - 3x^2 + 7$ G H

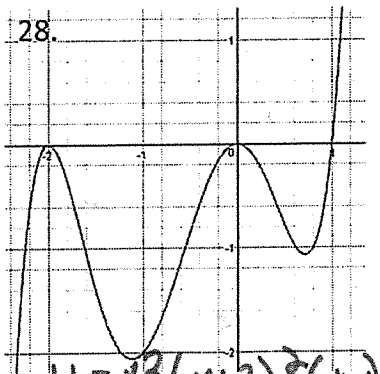
Write an equation in factored form for the following graphs.

27.



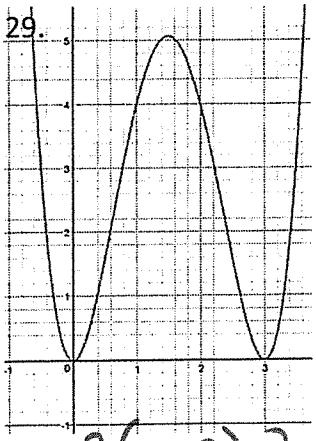
$y = -(x+3)(x+2)(x-1)$

28.



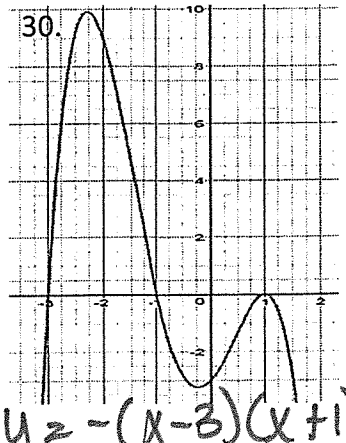
$y = x^2(x+2)^2(x-1)$

29.



$y = x^2(x-3)^2$

30.



$y = -(x-3)(x+1)(x-1)^2$

2-5 Not for 4th hour

F

Part 2: Trig

1) Convert

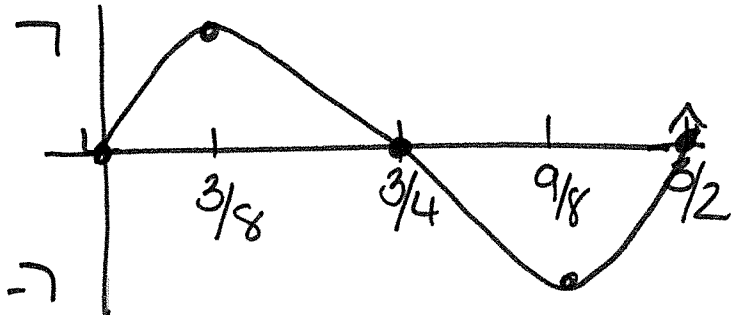
a) the angle $\frac{3\pi}{5}$ from radians to degrees

$108°$

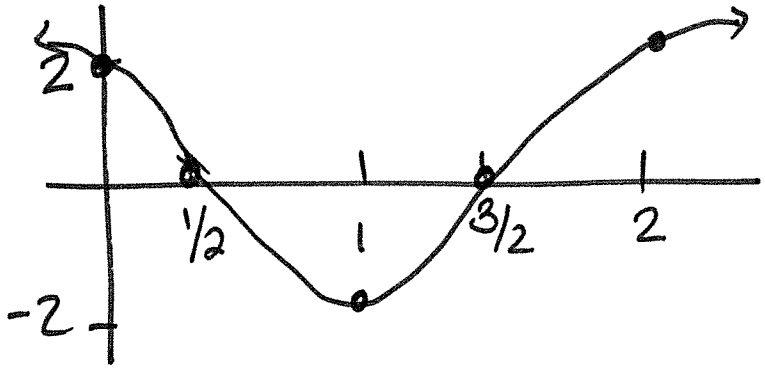
b) the angle $310°$ to radians.

$\frac{31\pi}{18}$

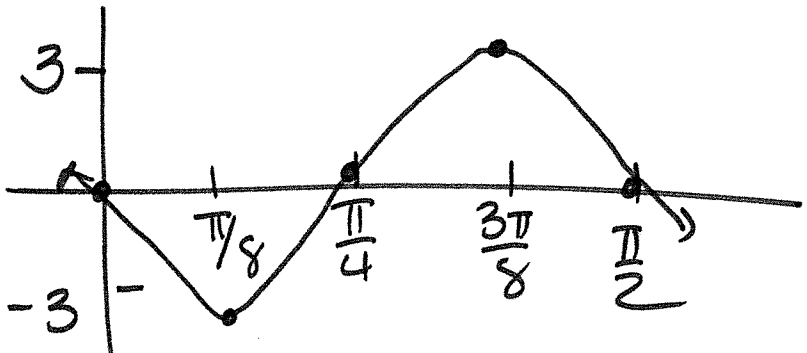
2) Graph one cycle of the function $f(x) = 7\sin\left(\frac{4\pi}{3}\theta\right)$. State the period & the amplitude, and make a table.



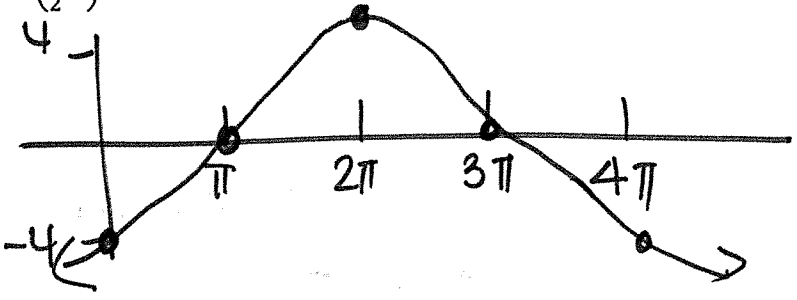
3) Graph one cycle of the function $f(x) = 2\cos(\pi\theta)$. State the period & the amplitude, and make a table.



4) Graph one cycle of the function $f(x) = -3\sin(4\theta)$. State the period & the amplitude, and make a table.



5) Graph one cycle of the function $f(x) = -4\cos\left(\frac{1}{2}\theta\right)$. State the period & the amplitude, and make a table.



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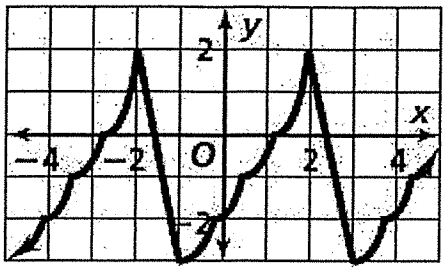

16. Determine the period and amplitude of the graph on the left.

$P = 4$

$A = 2.5$

Find *at least* two angles that are coterminal to the given angle.

17) 100°

460

18) 480°

120°

19) −220°

140°

20) −500°

220°

Find the reference angle of the given angle.

21) 225°

45°

22) 120°

60°

23) 330°

30°

24) 60°

60°

T

Find the exact value of the following:

27) $\sin\frac{11\pi}{6}$ 28) $\cos\frac{5\pi}{6}$ 29) $\tan\frac{5\pi}{4}$

Part 4: Rational Equations

Solve.

1) $\frac{9}{3x} = \frac{4}{x+2}$ $x=6$	2) $\frac{6}{3x-1} = \frac{3}{2x}$ $x=-1$
3) $\frac{8}{3x-2} = \frac{2}{x-1}$ $x=2$	4) $\frac{7}{x-3} = \frac{4}{x}$ $x=4$
5) $\frac{1}{6x} = \frac{3}{2x} - \frac{1}{6}$ $x=8$	6) $\frac{1}{3} - \frac{1}{x} = 1$ $x=-3/2$
7) $\frac{x+5}{4x} + \frac{11}{12} = \frac{2}{3x}$ $x=-1/2$	8) $\frac{x}{2x+6} - \frac{1}{x+3} = 1$ $x=-8$