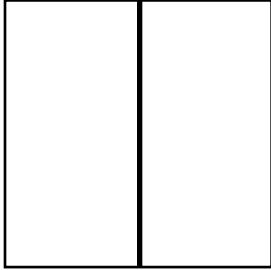


4D Quadratic Functions (converting quadratics from general to standard form, factoring trinomials, the blankety-blank method, determining extreme values of quadratic functions, the quadratic formula)

1. A rancher plans to build 2 rectangular corrals, side by side, with 500 feet of fencing. Determine the dimensions that maximize the total area.

**1C Polynomials (factoring cubics, polynomial long division),**

2. Factor $8x^3 - 27$

3. Perform polynomial long division to determine the remainder of $\frac{x^5 + 6x^4 + 8x^2 - 5x - 7}{x^3 + 2x}$

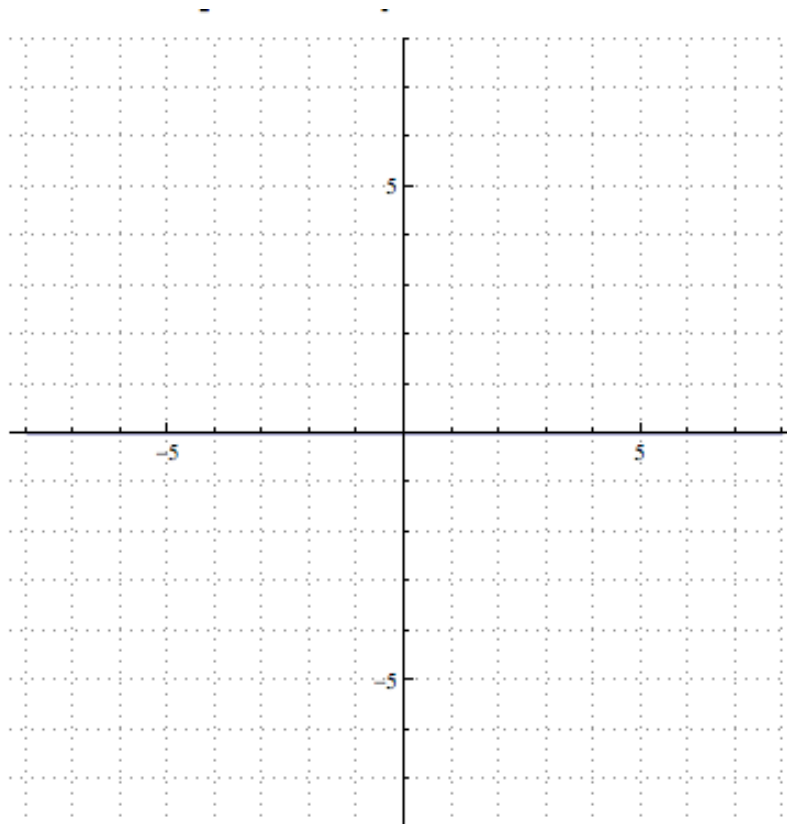
$R =$ _____

5A Polynomials (factoring, x-intercepts, end behavior)

4. $f(x) = -\frac{1}{3}(x^2 + 1)(9 - x^2)$

a) y – intercept(s) _____

b) x – intercept(s) _____

c) As $x \rightarrow \infty$, $f(x) \rightarrow$ _____d) As $x \rightarrow -\infty$, $f(x) \rightarrow$ _____e) Determine on what interval(s) $f(x) > 0$.f) Use all of the information you have learned about $f(x)$ to sketch the graph of $f(x)$ below.

5. $f(x) = -x^4(1-x^6)$ As $x \rightarrow -\infty$, $f(x) \rightarrow$ _____

6. $g(x) = -x^4(1-x^7)$ As $x \rightarrow -\infty$, $g(x) \rightarrow$ _____

8B Trigonometric Functions (reference angles)

7. If $\tan \theta = -\frac{\sqrt{3}}{3}$ and $\sin \theta < 0$ is then $\cos \theta =$ _____ (Give your answer in simplified form.)

1D (Simplifying Rational Expressions)

8. Fully simplify $f(x) = \frac{\left(\frac{1}{x^3} - 1\right)}{\left(\frac{1}{x} - 1\right)}$

5B Rational Functions (Vertical and Horizontal Asymptotes -- Holes in the graph)

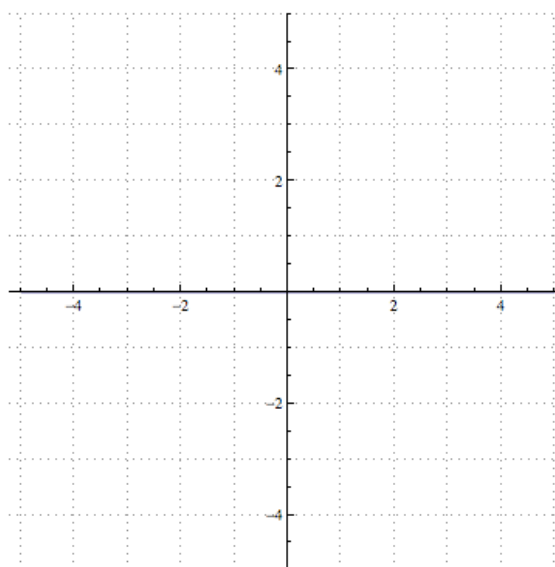
9.
$$f(x) = \frac{(x^2 + 4)(x + 1)}{x^4 - x^2}$$

a) State the domain of $f(x)$ _____b) x -intercepts. _____ c) y -intercepts. _____

d) vertical asymptotes _____ e) horizontal asymptotes _____

f) List the coordinates of all the holes. _____

g) Solve $\frac{(x^2 + 4)(x + 1)}{x^4 - x^2} > 0$



2A Solving Equations (polynomial, rational, and radical equations, equations with many variables)

10. Solve $\sqrt{x+4} = \sqrt{x+12} - 2$ for x .

11. Determine the lowest common denominator for $\frac{5}{x^2 - 2x - 8}$ and $\frac{3}{x^2 - 16}$

12. Solve for y $x = \frac{2+3y}{5+4y}$

13. Solve $x(3x+16) = -5$

2B Solving Inequalities:

14. Solve $\frac{x-8}{x} \leq 3-x$.

15. Solve $8 - |x+3| > 6$ State the solution in interval notation.