

KEY

Name _____

Make sure to know how to do multiple choice questions without choices given.

Graphing calculator not allowed

1. $y = (x+5)(x-5)(x+2)(x-2)$
 $y = (x^2 - 25)(x^2 - 4)$

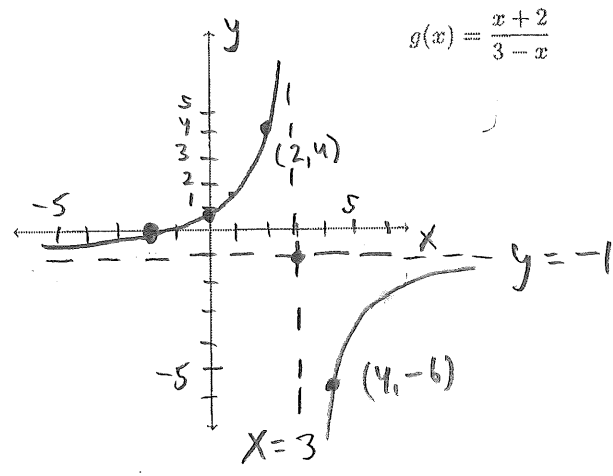
$y = x^4 - 4x^2 - 25x^2 + 100$

$y = x^4 - 29x^2 + 100$

1. Find the simplest polynomial function with integer coefficients whose graph crosses the x-axis only at (-5, 0), (5, 0), (-2, 0), and (2, 0). Assume A = 1.

2. Write asymptotes and intercepts. Sketch.

$y_{int} = \frac{0+2}{3-0} = \frac{2}{3}$ set $x=0$.
 $x_{int} = -2$ since $x+2=0$
 V. Asy: $x=3$ since $3-x=0$
 H. Asy: $y=-1$ because
 as $x \rightarrow \infty, g(x) \rightarrow \frac{x}{-x} = -1$
 $g(x) \rightarrow -1$



$g(x) = \frac{x+2}{3-x}$

Write asymptotes and intercepts.

3. $g(x) = \frac{-1}{x-4}$
 $y_{int} = \frac{1}{4}$ V. Asy: $x=4$
 $x_{int} = \text{NONE}$ H. Asy: $y=0$

4. $h(x) = \frac{5x-2}{x}$
 $y_{int} = \text{NONE}$ V. Asy: $x=0$
 $x_{int} = \frac{2}{5}$ H. Asy: $y=5$

5. $m(x) = \frac{4}{(x-5)^2}$
 $y_{int} = \frac{4}{25}$ V. Asy: $x=5$
 $x_{int} = \text{NONE}$ H. Asy: $y=0$

6. $g(x) = \frac{x+2}{(x-2)(x+7)}$
 $y_{int} = \frac{2}{(-2)(7)} = -\frac{1}{7}$ V. Asy: $x=2, x=-7$
 $x_{int} = -2$ H. Asy: $y=0$

7. Write slant asymptote. $g(x) = \frac{5x^2 + 3x - 2}{x-2}$
 $y = 5x$

Graphing calculator required

(get $y = 5x + 13$ if do polynomial division, or graphing)

8. The total daily profit P, in dollars on the production of x items is $P(x) = -2x^2 + 64x - 12$. How many items must be produced each day to maximize profit? What is the maximum profit?

USE WINDOW WITH XMAX = 40 AND DO ZOOM 0: ZOOM FIT.

16 items
\$500

9. Which of the following is an approximate zero of $y = 10x^3 - 9x + 4$?

- a) -1.4597 b) -1.2201 c) -1.1211 d) -0.5280 e) 1.3265
-1.121672

10. Given $f(x) = x^2 - 1$ and $g(x) = \frac{1}{x}$, find the x-value of the point of intersection of the two functions.

- a) 0.358 b) 0.754 c) 0.897 d) 1.134 e) 1.325
(1.324718, 0.75487767)

- Answer List
 1. $g(x) = x^4 - 29x^2 + 100$
 2. $x = 3, y = -1$
 3. $x = 4, y = 0$
 4. $x = 0, y = 5$
 5. $x = 5, y = 0$
 6. $x = 2, x = -7, y = 0$
 7. $y = 5x + 13$ OR JUST
 $x = 6$
 8. 16 items; \$500
 9. c
 10. e