

Chapter 2 Test Review Part B

Name: _____

Graphing Calculator

Period: _____ Date: _____

Precalculus

Show all of your work and answer each question completely.

1. Write a polynomial in factored form that has real coefficients and zeros at -3 and $5 + i$.

$$(x+3)(x-(5+i))(x-(5-i))$$

1. _____

2. Given $f(2) = 0$, find all zeros of $f(x) = x^3 - 4x^2 + 8x - 8$.

$$\begin{array}{r} 3 \quad 1 \quad -4 \quad 8 \quad -8 \\ \quad \quad 2 \quad -4 \quad 8 \\ \hline 1 \quad -2 \quad 4 \quad 10 \end{array}$$

$$x^2 - 2x + 4 = 0$$

$$x = \frac{2 \pm \sqrt{2^2 - 4(1)(4)}}{2}$$

$$x = \frac{2 \pm 2i\sqrt{3}}{2}$$

$$x = \frac{2 \pm \sqrt{4-16}}{2}$$

$$x = \frac{2 \pm \sqrt{-12}}{2}$$

$$x = 1 \pm i\sqrt{3}$$

3. Raymond's distance D from a motion detector is given by the data below.

t (sec)	0	1	2	3	4	5	6	7	8	9	10
D (m)	6.7	8.1	8.6	8.5	9	9.3	10.2	11	10.6	10.8	10.9

- a) Find a quadratic regression equation to represent this data. Round the nearest thousandth.

3a. $y = -0.029x^2 + .687x + 6.997$

- b) Use your model from part (a) to estimate his distance from the motion detector at 13 seconds.

3b. 11.079 m

- c) Find a linear regression model to represent this data. Round to the nearest thousandth.

3c. $y = 0.4x + 7.427$

- d) Find the correlation coefficient for your model in part (c). What does this tell you about the data?

3d. $r = 0.951$
Strong positive correlation

4. Find all the zeros of $f(x) = x^4 + 5x^3 - 10x^2 + 20x - 56$ given that one zero is $-2i$.

4. $x = 2i, x = 2, x = -7$

$(x+2i)(x-2i)$

$x^2 + 4$

$x^2 + 4$

$$\begin{array}{r} x^2 + 5x - 14 \\ x^4 + 5x^3 - 10x^2 + 20x - 56 \\ \underline{x^4 + 4x^2} \\ 5x^3 - 14x^2 + 20x \\ \underline{5x^3 + 20x} \\ -14x^2 - 56 \\ \underline{-14x^2 - 56} \\ 0 \end{array}$$

$x^2 + 5x - 14 = 0$

$(x - 2)(x + 7) = 0$

$x = 2 \quad x = -7$

5. List the set of all possible rational zeros for the polynomial:

$f(x) = 6x^4 - 1x^3 + 5x^2 - 2x + 15$

5. _____

$p = 15 \quad 1, 3, 5, 15$
 $q = 6 \quad 1, 2, 3, 6$

$\pm 1, 3, 5, 15, \frac{1}{2}, \frac{3}{2}, \frac{5}{2}, \frac{15}{2}, \frac{1}{3}, \frac{5}{3}, \frac{15}{3}, \frac{1}{6}, \frac{5}{6}, \frac{15}{6}$

6. Given the power function $h(x) = 2e^{\sqrt[4]{x^3}}$

a) Name the constant of variation.

6a. $2e$

b) Name the power

6b. $\frac{4}{3}$

c) Is $h(x)$ an example of inverse or direct variation?

6c. direct