

## 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  $f(x) = x^3 - 4x^2 + 8x - 8$ .

$$\begin{array}{r|rrrr} 2 & 1 & -4 & 8 & -8 \\ & & 2 & -4 & 8 \\ \hline & 1 & -2 & 4 & 0 \end{array}$$

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

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

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

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

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

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

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.  $11.079 \text{ m}$

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

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

$$x^2 + 4$$

$$x^2 + 4$$

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

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

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

$$x = 2 \quad x = -7$$

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

$$\begin{array}{r} -14x^2 - 56 \\ \underline{-14x^2 - 56} \\ 0 \end{array}$$

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

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

5. \_\_\_\_\_

$$p = 15 \quad 1, 3, 5, 15$$

$$q = 6 \quad 1, 2, 3, 6$$

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

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