

Secondary III
Unit 4 Review
Assignment 4.6

Name: _____
 Period: _____

Multiple Choice

1. Given $k(x) = 2x^5 - 8x^4 - 6x^3 + 20x^2 + 7x + 52$, determine $k(4)$.
- 16
 - 48
 - 112
 - 397

2. Determine the quotient: $\frac{6x^4 + x^3 + 8x^2 + 9x - 4}{3x - 1}$
- $6x^3 + 6x^2 + 12x + 12$
 - $6x^3 + 3x^2 + 9x + 12$
 - $6x^3 + 9x^2 - 6x + 12$
 - $6x^3 + 12x^2 + 3x - 12$

3. What are the possible rational roots of $x^3 - 4x^2 + 16x - 5$?
- $\pm 1, \pm 2, \pm 5, \pm 10$
 - $\pm 1, \pm 2, \pm 5$
 - $\pm 1, \pm 5,$
 - $\pm 1, \pm 2, \pm 3, \pm 4, \pm 5$

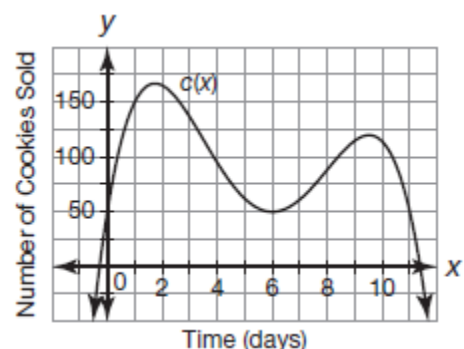
4. Which is a factor of $d(x) = 12x^4 - 20x^3 - 6x^2 - 2x - 4$?
- $x + 3$
 - $x - 3$
 - $x - 2$
 - $x + 2$

5. Which is the correct expansion of $(3x + 2y)^5$?
- $32x^5 + 240x^4y + 720x^3y^2 + 1080x^2y^3 + 810xy^4 + 243y^5$
 - $243x^5 + 810x^4y + 1080x^3y^2 + 720x^2y^3 + 240xy^4 + 32y^5$
 - $32x^5 + 160x^4y + 320x^3y^2 + 320x^2y^3 + 160xy^4 + 32y^5$
 - $243x^5 + 1215x^4y + 2430x^3y^2 + 2430x^2y^3 + 1215xy^4 + 243y^5$

6. The function $c(x)$ models the number of cookies sold each day by a bakery during a 10-day period.

Between which days did the number of cookies sold by the bakery increase?

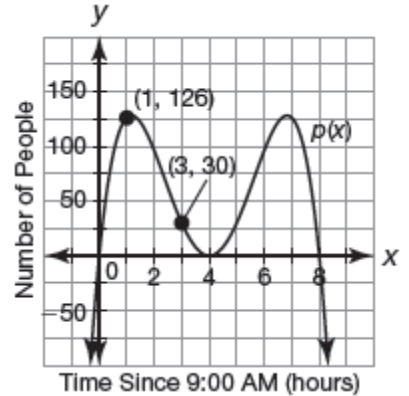
- between 2 and 3 days
- between 3 and 4 days
- between 5 and 6 days
- between 6 and 7 days



Free Response: Show work to receive credit.

7. The function $p(x)$ models the attendance at a museum exhibit from the time it opens to the time it closes 8 hours later.

a. Suppose the exhibit opens at 9:00 a.m. Estimate the time(s) during which the attendance was greater than 100 people. Round to the nearest half hour.



b. Explain what happened to the attendance around 1:00 p.m.

c. Determine the average rate of change in attendance between 10:00 a.m. and noon. Explain the meaning of your answer in terms of the problem situation.

8. **A function and one of its factors is given. Use synthetic division to find the quotient, then find the rest of the zeros by factoring or using the quadratic formula.**

a. $f(x) = x^3 + 5x^2 - 9x - 45; x + 5$

b. $k(x) = x^3 - 12x - 16; x - 4$

9. **Use the Factor Theorem to determine the unknown coefficient for**

$f(x) = x^4 - 3x^3 + kx^2 - 16x + 20$ if $x - 2$ is a factor of $f(x)$.

Factor completely and solve each polynomial equation.

10. $2x^3 - 3x^2 - 32x + 48 = 0$

11. $6x^5 - 24x^4 + 18x^3 = 0$

12. $5x^3 - 40x = 0$

Use the Rational Root Theorem to determine the possible rational roots. Then, solve completely.

13. $x^3 - 6x^2 + 11x - 6 = 0$
 (HINT: at least two of the roots are positive)

14. $x^4 + 2x^3 - 9x^2 - 2x + 8 = 0$
 (HINT: one of the factors is $x-1$)

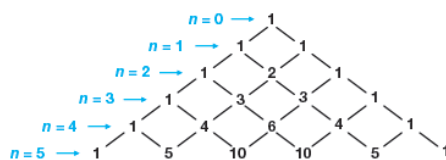
Use Pascal's Triangle (or the Binomial Theorem) to expand the binomials.

15. $(a - b)^4$

16. $(2x + y)^5$

Formulas

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$



$$(a + b)^2 = a^2 + 2ab + b^2$$

$$(a - b)^2 = a^2 - 2ab + b^2$$

$$a^2 - b^2 = (a + b)(a - b)$$

Remember: Factor by Grouping if there are 4 terms