Name **Schlansky**

Mr. Schlansky

Date _____

Algebra II

Remainder Theorem

Find the remainder when $p(x)$ is divided by $g(x)$

1. $p(x) = x^3 - 9x^2 + 21x - 5$
   $g(x) = x - 5$

   $p(5) = (5)^3 - 9(5)^2 + 21(5) - 5$

2. $p(x) = x^4 - 8x^2 + 3x$
   $g(x) = x + 4$

   $p(-4) = (-4)^4 - 8(-4)^2 + 3(-4)$

3. $p(x) = x^3 - 2x^2 + 6x - 2$
   $g(x) = x - 3$

   $p(3) = (3)^3 - 2(3)^2 + 6(3) - 2$

4. $p(x) = x^3 - 5x^2 - 5x + 25$
   $g(x) = x + 2$

   $p(-2) = (-2)^3 - 5(-2)^2 - 5(-2) + 25$

5. $p(x) = x^5 + 3x^4 - 4x^3 - 2x^2 + x - 3$
   $g(x) = x + 9$

   $p(-9) = (-9)^5 + 3(-9)^4 - 4(-9)^3 - 2(-9)^2 + (-9) - 3$
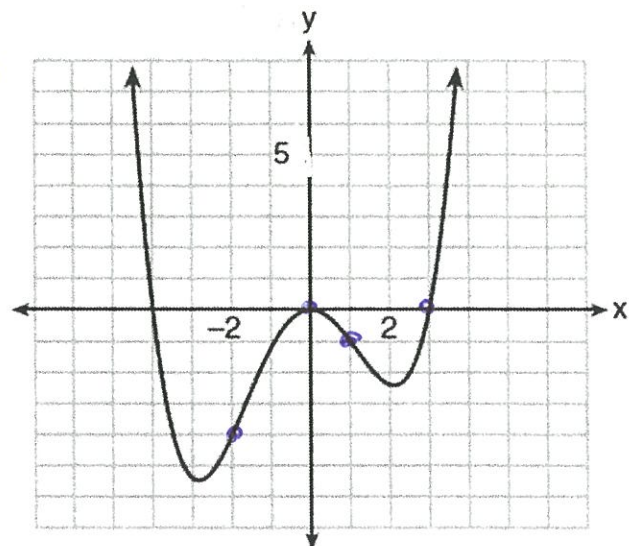
6. $p(x) = -2x^4 - 3x^3 + 9x - 10$
   $g(x) = x + 8$

   $p(-8) = -2(-8)^4 - 3(-8)^3 + 9(-8) - 10$

7. What is the remainder when the following polynomial is divided by:
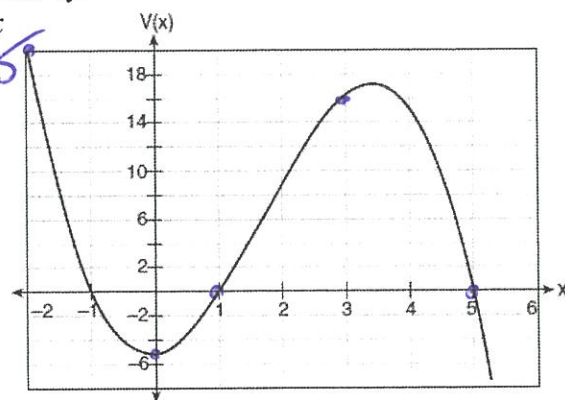   a) $x - 1$ b) $x + 2$ c) $x - 3$ d) x

   $p(1) = -1$ $p(-2) = -4$ $p(3) = 0$ $p(0) = 0$

8. What is the remainder when the following polynomial is divided by:

a) $x-3$ b) $x+2$ c) $x-5$ d) $x-1$ e) x

$P(3)=16$ $P(-2)=20$ $P(5)=0$ $P(1)=0$ $P(0)=5$
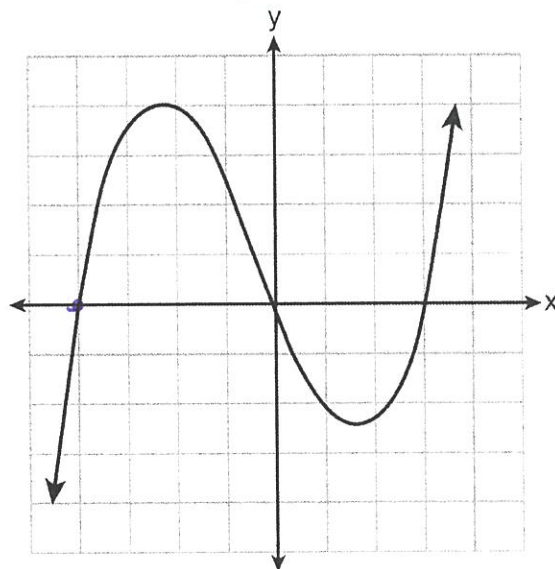

9. The graph of $p(x)$ is shown below.

What is the remainder when $p(x)$ is divided by $x+4$?

1) $x-4$
2) -4
3) 0
4) 4

$P(-4)=0$

Find the remainder when the following polynomials are divided

10. $\dfrac{x^3 + 2x^2 - 8x + 2}{x-3}$

$P(3)=(3)^3+2(3)^2-8(3)+2$

$P(3)=23$

11. $\dfrac{3x^4 - 5x^3 - 2x - 6}{x+8}$

$P(-8)=3(-8)^4-5(-8)^3-2(-8)-6$

$P(-8)=14858$

12. $\dfrac{-x^3 + 4x^2 - 2x + 7}{x-5}$

$P(5)=-(5)^3+4(5)^2-2(5)+7$

$P(5)=-28$

13. $\dfrac{2x^5 - 6x^3 + 5x - 1}{x+2}$

$P(-2)=2(-2)^5-6(-2)^3+5(-2)-1$

$P(-2)=-27$