

## Extra Practice

1. Divide using synthetic division:

$$(p^3 - 10p^2 + 20p + 26) \div (p - 5)$$

2. Divide using long division:

$$\frac{6x^3 + 10x^2 + x + 8}{2x^2 + 1}$$

3. Divide using synthetic division:

$$(k^3 - 30k - 18 - 4k^2) \div (3 + k)$$

4. Divide using long division:

$$\frac{6x^3 - 16x^2 + 17x - 6}{3x - 2}$$

- 5-7. Factor Completely:

$$-3x^4 + 30x^3 - 75x^2$$

$$27x^3 - 1$$

$$125x^9 + 27y^6$$

- 8-10. Solve Completely:

$$x^4 - 36 = 0$$

$$x^4 - 10x^2 + 21 = 0$$

$$3k^3 - 5 = -2192$$

11. Expand:

$$(2x - 1)^5$$

12. Determine  $P(2)$ :

Given  $P(x) = 11x^4 + 8x^3 - 7x^2 - 1$ .

13. Graph Modeling:

The table shows the total U.S. biomass energy consumptions  $y$  (in trillions of British thermal units, or Btus) in the year  $t$ , where  $t = 1$  corresponds to 2001. Find a polynomial model for the data. Use the model to estimate the total U.S. biomass energy consumption in 2013.

|                       |      |      |      |      |      |      |
|-----------------------|------|------|------|------|------|------|
| <b><math>t</math></b> | 1    | 2    | 3    | 4    | 5    | 6    |
| <b><math>y</math></b> | 2622 | 2701 | 2807 | 3010 | 3117 | 3267 |

|                       |      |      |      |      |      |      |
|-----------------------|------|------|------|------|------|------|
| <b><math>t</math></b> | 7    | 8    | 9    | 10   | 11   | 12   |
| <b><math>y</math></b> | 3493 | 3866 | 3951 | 4286 | 4421 | 4316 |