Math 1513 - College Algebra
Discussion Board Week 8 - Due 2012.03.03

Perform long division of polynomial $p(x)$ by the given polynomial $q(x)$. Use your result to determine whether or not the given polynomial $p(x)$ has any obvious roots which involve $q(x)$, if so state the root(s).

1.
$$p(x) = x^8 - \frac{75}{8}x^6 + \frac{7}{4}x^7 + \frac{21}{8}x^5 + \frac{41}{4}x^4 - \frac{35}{2}x^3 + \frac{201}{8}x^2 - \frac{147}{8}x + \frac{9}{2}$$
$$q(x) = x - 1$$

2.
$$p(x) = x^8 - \frac{75}{8}x^6 + \frac{7}{4}x^7 + \frac{21}{8}x^5 + \frac{41}{4}x^4 - \frac{35}{2}x^3 + \frac{201}{8}x^2 - \frac{147}{8}x + \frac{9}{2}$$
$$q(x) = x - \frac{1}{2}$$

3.
$$p(x) = x^8 - \frac{75}{8}x^6 + \frac{7}{4}x^7 + \frac{21}{8}x^5 + \frac{41}{4}x^4 - \frac{35}{2}x^3 + \frac{201}{8}x^2 - \frac{147}{8}x + \frac{9}{2}$$
$$q(x) = x + 1$$

4.
$$p(x) = x^8 - \frac{75}{8}x^6 + \frac{7}{4}x^7 + \frac{21}{8}x^5 + \frac{41}{4}x^4 - \frac{35}{2}x^3 + \frac{201}{8}x^2 - \frac{147}{8}x + \frac{9}{2}$$
$$q(x) = x + \frac{1}{2}$$

5.
$$p(x) = x^8 - \frac{75}{8}x^6 + \frac{7}{4}x^7 + \frac{21}{8}x^5 + \frac{41}{4}x^4 - \frac{35}{2}x^3 + \frac{201}{8}x^2 - \frac{147}{8}x + \frac{9}{2}$$
$$q(x) = x - \frac{3}{4}$$

6.
$$p(x) = x^8 - \frac{75}{8}x^6 + \frac{7}{4}x^7 + \frac{21}{8}x^5 + \frac{41}{4}x^4 - \frac{35}{2}x^3 + \frac{201}{8}x^2 - \frac{147}{8}x + \frac{9}{2}$$
$$q(x) = x + \frac{3}{4}$$

7.
$$p(x) = x^8 - \frac{75}{8}x^6 + \frac{7}{4}x^7 + \frac{21}{8}x^5 + \frac{41}{4}x^4 - \frac{35}{2}x^3 + \frac{201}{8}x^2 - \frac{147}{8}x + \frac{9}{2}$$
$$q(x) = x^2 + 1$$

8.
$$p(x) = x^8 - \frac{75}{8}x^6 + \frac{7}{4}x^7 + \frac{21}{8}x^5 + \frac{41}{4}x^4 - \frac{35}{2}x^3 + \frac{201}{8}x^2 - \frac{147}{8}x + \frac{9}{2}$$
$$q(x) = x^2 - 1$$

9.
$$p(x) = x^8 - \frac{75}{8}x^6 + \frac{7}{4}x^7 + \frac{21}{8}x^5 + \frac{41}{4}x^4 - \frac{35}{2}x^3 + \frac{201}{8}x^2 - \frac{147}{8}x + \frac{9}{2}$$
$$q(x) = x - 4$$

10.

$$p(x) = x^8 - \frac{75}{8}x^6 + \frac{7}{4}x^7 + \frac{21}{8}x^5 + \frac{41}{4}x^4 - \frac{35}{2}x^3 + \frac{201}{8}x^2 - \frac{147}{8}x + \frac{9}{2}$$
$$q(x) = x + 4$$

11.

$$p(x) = x^8 - \frac{75}{8}x^6 + \frac{7}{4}x^7 + \frac{21}{8}x^5 + \frac{41}{4}x^4 - \frac{35}{2}x^3 + \frac{201}{8}x^2 - \frac{147}{8}x + \frac{9}{2}$$
$$q(x) = x^2 - 3$$

12.

$$p(x) = x^8 - \frac{75}{8}x^6 + \frac{7}{4}x^7 + \frac{21}{8}x^5 + \frac{41}{4}x^4 - \frac{35}{2}x^3 + \frac{201}{8}x^2 - \frac{147}{8}x + \frac{9}{2}$$
$$q(x) = x^2 + 3$$

13.

$$p(x) = x^8 - \frac{20}{3}x^6 - \frac{77}{12}x^7 + \frac{67}{4}x^5 - \frac{9}{2}x^4 + \frac{1061}{12}x^3 + \frac{203}{3}x^2 - \frac{235}{4}x - \frac{35}{2}$$
$$q(x) = x + 1$$

14.

$$p(x) = x^8 - \frac{20}{3}x^6 - \frac{77}{12}x^7 + \frac{67}{4}x^5 - \frac{9}{2}x^4 + \frac{1061}{12}x^3 + \frac{203}{3}x^2 - \frac{235}{4}x - \frac{35}{2}$$
$$q(x) = x - 1$$

15.

$$p(x) = x^8 - \frac{20}{3}x^6 - \frac{77}{12}x^7 + \frac{67}{4}x^5 - \frac{9}{2}x^4 + \frac{1061}{12}x^3 + \frac{203}{3}x^2 - \frac{235}{4}x - \frac{35}{2}$$
$$q(x) = x - \frac{2}{3}$$

16.

$$p(x) = x^8 - \frac{20}{3}x^6 - \frac{77}{12}x^7 + \frac{67}{4}x^5 - \frac{9}{2}x^4 + \frac{1061}{12}x^3 + \frac{203}{3}x^2 - \frac{235}{4}x - \frac{35}{2}$$
$$q(x) = x + \frac{2}{3}$$

17.

$$p(x) = x^8 - \frac{20}{3}x^6 - \frac{77}{12}x^7 + \frac{67}{4}x^5 - \frac{9}{2}x^4 + \frac{1061}{12}x^3 + \frac{203}{3}x^2 - \frac{235}{4}x - \frac{35}{2}$$
$$q(x) = x - \frac{1}{4}$$

18.

$$p(x) = x^8 - \frac{20}{3}x^6 - \frac{77}{12}x^7 + \frac{67}{4}x^5 - \frac{9}{2}x^4 + \frac{1061}{12}x^3 + \frac{203}{3}x^2 - \frac{235}{4}x - \frac{35}{2}$$
$$q(x) = x + \frac{1}{4}$$

19.

$$p(x) = x^8 - \frac{20}{3}x^6 - \frac{77}{12}x^7 + \frac{67}{4}x^5 - \frac{9}{2}x^4 + \frac{1061}{12}x^3 + \frac{203}{3}x^2 - \frac{235}{4}x - \frac{35}{2}$$
$$q(x) = x^2 - 3$$

20.

$$p(x) = x^8 - \frac{20}{3}x^6 - \frac{77}{12}x^7 + \frac{67}{4}x^5 - \frac{9}{2}x^4 + \frac{1061}{12}x^3 + \frac{203}{3}x^2 - \frac{235}{4}x - \frac{35}{2}$$
$$q(x) = x^2 + 3$$

21.

$$p(x) = x^8 - \frac{20}{3}x^6 - \frac{77}{12}x^7 + \frac{67}{4}x^5 - \frac{9}{2}x^4 + \frac{1061}{12}x^3 + \frac{203}{3}x^2 - \frac{235}{4}x - \frac{35}{2}$$
$$q(x) = x - 7$$

22.

$$p(x) = x^8 - \frac{20}{3}x^6 - \frac{77}{12}x^7 + \frac{67}{4}x^5 - \frac{9}{2}x^4 + \frac{1061}{12}x^3 + \frac{203}{3}x^2 - \frac{235}{4}x - \frac{35}{2}$$
$$q(x) = x + 7$$

23.

$$p(x) = x^8 - \frac{20}{3}x^6 - \frac{77}{12}x^7 + \frac{67}{4}x^5 - \frac{9}{2}x^4 + \frac{1061}{12}x^3 + \frac{203}{3}x^2 - \frac{235}{4}x - \frac{35}{2}$$
$$q(x) = x^2 - 5$$

24.

$$p(x) = x^8 - \frac{20}{3}x^6 - \frac{77}{12}x^7 + \frac{67}{4}x^5 - \frac{9}{2}x^4 + \frac{1061}{12}x^3 + \frac{203}{3}x^2 - \frac{235}{4}x - \frac{35}{2}$$
$$q(x) = x^2 + 5$$

25.

$$p(x) = x^8 - \frac{20}{3}x^6 - \frac{77}{12}x^7 + \frac{67}{4}x^5 - \frac{9}{2}x^4 + \frac{1061}{12}x^3 + \frac{203}{3}x^2 - \frac{235}{4}x - \frac{35}{2}$$
$$q(x) = x + \frac{3}{4}$$