Name: _____

Polynomials and Synthetic Division

1) Evaluate *P(c)* using synthetic division along with the Remainder Theorem.

   1) $P(x)=3x^7-8x^6-38x^5+70x^3+21x^2+3;\ c=5$

   2) $P(x)=x^6+3x^5+10x^4-35x^2-2x-11;\ c=-2$

   3) $P(x)=4x^4-5x^3-22x^2-1;\ c=-\frac{3}{4}$

   4) $P(x)=6x^6-19x^5+x^4-32x^3+59x+13;\ c=\frac{7}{2}$

   5) $P(x)=x^3-4x^2+5x+2;\ c=2$

   6) $P(x)=5x^3+7x^2-8x-3;\ c=-1$

   7) $P(x)=7x^3+8x^2-4x-12;\ c=-1$

   8) $P(x)=2x^4-7x^3+6x-14;\ c=3$

2) 1) Divide $2x^2 + 3x + 1$ by $x + 2$.
   2) Divide $3x^2 - x^3 - 3x + 5$ by $x - 1 - x^2$
   3) Divide $3x^3 + x^2 + 2x + 5$ by $1 + 2x + x^2$

3) Check whether the first polynomial is a factor of the second polynomial by dividing the second polynomial by the first polynomial:

   (1) $t^2 - 3,\ 2t^4 + 3t^3 - 2t^2 - 9t - 12$

   (2) $x^2 + 3x + 1,\ 3x^4 + 5x^3 - 7x^2 + 2x + 2$

   (3) $x^3 - 3x + 1,\ x^5 - 4x^3 + x^2 + 3x + 1$