Quiz 6 Review Sheet

1. Multiply and collect any like terms:
   (a) $(x-3)(x+5)$ (b) $(a^2-2a+1)(a+1)$
   (c) $(b-3c)(2b+3c)$ (d) $xy(2x^2-y^2)(x+y)$
   (e) $(r^2+3)(r^2-3)$
2. Factor, if possible, the following expressions:
   (a) z^2-z-20
   (b) $q^2-11q+28$ (c) $(r+3)a-(r+3)r$
   (d) s^3-9s (e) u^2+16
   (f) $2mx^3-2mxy^2$ (g) $12x^2-24x-36$
   (h) $9m^2y-yz^2$ (i) $t(t^2-4t-4)$
3. Solve the following equations by factoring. Check your solutions in the original equation.
   (a) $u^2+2u-3=0$ (b) $q^2=-q+12$
   (c) $3p^2-3p+3=2p^2+2p-3$
4. Find the roots of:
   (a) $(u-7)(u-3)(u+5)$ (b) $x^2+10x+21$
   (c) $t(t^2-4t-4)$
5. Divide:
   (a) $(x^3-x^2+11x-15)\div(x+3)$ (b) $(x^3-3x^2-x+8)\div(x-2)$

Answers

1.

(a) $x^2 + 2x - 15$ (b) $a^3 - a^2 - a + 1$

(c) $2b^2 - 3bc - 9c^2$ (d) $2x^4y + 2x^3y^2 - x^2y^3 - xy^4$

(e) $r^4 - 9$

2.

(a) $(z - 5)(z + 4)$

(b) $(q - 4)(q - 7)$ (c) $(r + 3)(a - r)$

(d) $s(s - 3)(s + 3)$ (e) $u^2 + 16$ (can't be factored further)

(f) $2mx(x - y)(x + y)$ (g) $12(x - 3)(x + 1)$

(h) $y(3m - z)(3m + z)$ (i) $t(t^2 - 4t - 4)$ (can't be factored further)

3.

(a) $u = -3$, $u = 1$ (b) $q = -4$, $q = 3$

(c) $p = 2$, $p = 3$

4.

(a) $u = 7$, $u = 3$, $u = -5$ (b) $x = -3$, $x = -7$

(c) $t = 0$ is one root. (There are other roots, but we can't find them by factoring— you don't have to worry about those.)

5.

(a) quotient: $x^2 - 4x + 23$, remainder: -84 (b) quotient: $x^2 - x - 3$, remainder: 2