Solving Quadratic Equations

Solve the equations below by factoring and using the zero product principle.

1) $16y^2 - 81 = 0$
2) $2x^2 + 7x - 4 = 0$
3) $50x^3 - 5x^2 - x = 0$

Solve the equations below by using the square-root principle.

4) $4u^2 + 4 = -21$
5) $3(x-1)^2 = 33$ Use a calculator to find rational approximations of the roots in #5.
6) $2(5x-2)(5x-2) = 512$

Solve the equation by completing the square or using the quadratic formula.

7) $x^2 - x - 1 = 0$
8) $5x^2 - x - 2 = 8$ Use a calculator to find rational approximations of the roots in #8.
9) $2x^3 + 4x^2 + 5x = 0$

Answers:

1) $y = \pm\frac{9}{4}$
2) $x = \left\{-4, \frac{1}{2}\right\}$
3) $x = \left\{-\frac{1}{10}, 0, \frac{1}{5}\right\}$
4) $u = \pm\frac{5}{2}i$
5) $x = 1 \pm \sqrt{11},\ x \approx \{-2.32, 4.32\}$
6) $x = \left\{\frac{-14}{5}, \frac{18}{5}\right\}$
7) $x = \frac{1}{2} \pm \frac{\sqrt{5}}{2}$
8) $x = \frac{1 \pm \sqrt{201}}{10},\ x = \{-1.32, 1.52\}$
9) $x = \left\{0, -1 - \frac{1}{2}i\sqrt{6}, -1 + \frac{1}{2}i\sqrt{6}\right\}$