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Extra Examples Section 3-4 and 3-5

1 **Find all real solutions.**

$8x^4 - 30x^2 + 7 = 0$

$x^2 =$

prod $= 56x^4$
sum $= -30x^2$
$-28x^2, -2x^2$

$(4x^2 - 1)(2x^2 - 7) = 0$

$-2x^2$, $-28x^2$

$4x^2 - 1 = 0$ $\quad 2x^2 - 7 = 0$

$4x^2 = 1$ $\quad 2x^2 = 7$

$x^2 = \frac{1}{4}$ $\quad x^2 = \frac{7}{2}$

$\sqrt{x^2} = \frac{\sqrt{7}}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

$x = \pm\frac{1}{2}$ $\quad x = \pm\frac{\sqrt{14}}{2}$

2 **Find all real solutions.**

$64x^3 = 27$

$64x^3 - 27 = 0$

1 real, 2 complex

$(4x - 3)(16x^2 + 12x + 9) = 0$

$\sqrt[3]{x^3} = \sqrt[3]{\frac{27}{64}}$

$x = \frac{3}{4}$

$x = \frac{3}{4}$ $\quad b^2 - 4ac$

$12^2 - 4(16)(9) < 0$

3

Factor p(x) given that p(a) = 0.

$p(x) = 2x^3 + 7x^2 - 33x - 18$; $a = -6$

-6 | 2 $\quad$ 7 $\quad$ −33 $\quad$ −18

$\quad\quad$ −12 $\quad$ 30 $\quad$ 18

$\quad$ 2 $\quad$ −5 $\quad$ −3 $\quad$ | 0

$(x+6)(2x^2 - 5x - 3) = (x+6)(2x+1)(x-3)$