Sec 5.3

#10) a) $x^6 - 7x^3 - 8 = 0$

This is like the examples of the "quadratics in disguise" on p. 139 Exs. 5.3.10 & 5.3.11.

Consider that $x^6 = (x^3)^2$.

Let $u = x^3$, then $u^2 = x^6$

Rewrite the equation in terms of this u-variable. That is,

$u^2 - 7u - 8 = 0$. Factor it:

$(u-8)(u+1) = 0$, $u = 8, -1$

Now substitute each value back into the $u = x^3$

$8 = x^3$

$2 = x$

$-1 = x^3$

$-1 = x$

#10 b) $2x^4 - 5x^2 = 3$

$$2x^4 - 5x^2 - 3 = 0$$

We can do this the same as a quadratic, but we'd have to factor a couple of times:

$$(2x^2 + 1)(x^2 - 3) = 0$$

$2x^2 + 1 = 0$

$2x^2 = -1$

$x^2 = -\frac{1}{2}$

$x = \sqrt{-\frac{1}{2}}$

no solution

(can't take root of negative number)

$x^2 - 3 = 0$

$x^2 = 3$

$\boxed{x = \pm\sqrt{3}}$

These are the 2 solns.