Precalculus Honors
P.4 day 1 Practice

1. Solve the equation: $x^2 = |3x-4|$

$\{-4, 1\}$

$x^2 = 3x-4$ or $x^2 = -(3x-4)$
$x^2-3x+4=0$ $x^2+3x-4=0$
no solutions $(x+4)(x-1)=0$
$(b^2-4ac = 9-16=-7)$ $\{-4, 1\}$

2. Solve the equation: $|2x+3| = 5-x$

$2x+3=5-x$ or $-(2x+3) = 5-x$
$3x = 2$ $-2x-3 = 5-x$
$x = 2/3$ $-8 = x$

$\{-8, 2/3\}$

3. Simplify $\dfrac{x^5y^8}{(2x^2)^3y^5}$ $= \dfrac{x^5y^8}{2^3x^6y^5} = \boxed{\dfrac{y^3}{8x}}$

4. Melinda has $12,000 to invest; she invests part of it in a project which pays 8% interest once per year, and she invests the rest of it in an account which pays 3%. Let x represent the amount that Melinda invests at 8%.

a) What is the domain for x? $[0, 12{,}000]$

(note: $(0, 12000)$ is also acceptable)

b) If Melinda earns $580.00 in interest for the year, estimate x.

$0.08x + 0.03(12000 - x) = 580$
$0.08x + 360 - 0.03x = 580$
$0.05x = 220$
$x = 4400$

5. Write an equation in point-slope form for the line that...

a) passes through (5, -6) and is parallel to the line $4x+5y=17$

$y+6 = -\frac{4}{5}(x-5)$

$5y = -4x+17$
$y = -\frac{4}{5}x + \frac{17}{5}$ → slope $= -\frac{4}{5}$

b) passes through (5, -6) and is perpendicular to the line $7x-2y=-8$

$y+6 = -\frac{2}{7}(x-5)$

$2y = 7x+8$
$y = \frac{7}{2}x + 4$ → old slope $= \frac{7}{2}$
new slope $= -2/7$