Solve.

$$\frac{3}{2}\log_2 4 - \frac{1}{2}\log_2 x = 3$$

$4^{3/2}$

$\log_2 (\sqrt{4})^3 - \log_2 \sqrt{x}$

$\log_2 \frac{8}{\sqrt{x}} = 3$

$2^3 = \frac{8}{\sqrt{x}}$ $\quad \frac{8}{1} = \frac{8}{\sqrt{x}}$ $\quad 8 = 8\sqrt{x}$ $\quad x = 1$

$1 = \sqrt{x}$

Second method to solve the previous problem.

$$2\left(\frac{3}{2}\log_2 4 - \frac{1}{2}\log_2 x = 3\right)$$

$3\log_2 4 - \log_2 x = 6$

$\log_2 64 - \log_2 x = 6$

$\log_2 \frac{64}{x} = 6$

$2^6 = \frac{64}{x}$

$64x = 64$

$x = 1$

$\frac{64}{1} = \frac{64}{x}$

from yesterday's sheet

5. $\log_6 x + \log_6 (x - 5) = 2$

$\log_6 (x^2 - 5x) = 2$

$36 = x^2 - 5x$

$0 = x^2 - 5x - 36$

$0 = (x - 9)(x + 4)$

$x = 9, -4$ ✓ ✗