Solving Equations (recap)

$2x + 7 = 20$

$x = 6.5$

$6x - 2 = 1$

$x = 0.5$

$3(x+8) = 33$

$x = 3$

$3x + 5 = 21 - x$

$x = 4$

$12 - 2x = 10$

$x = 1$

Changing the Subject of a formula

$y = x + 3$

In this equation y is the subject

$y = x - 5$

$y + 5 = x$

$4y = 2x$

$2y = x$

Make x the subject

$2y = 3x - 1$

$2y + 1 = 3x$

$\frac{2y+1}{3} = x$

$\frac{1}{3}(2y+1) = x$

$4t + 5 = 3x - 1$

$4t + 6 = 3x$

$\frac{4t+6}{3} = x$

$14\pi = 4x$

$\frac{7\pi}{2} = x$

$3(x+7) = 42$

$3x + 21 = 42$

$3x = 21$

$x = 7$

$\frac{2+x}{5} = 13$

$2 + x = 65$

$x = 63$

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Changing the subject (harder!)
Fractions and squares

Make x the subject:

$3x^2 - y = 4a$

$\frac{2a - b}{5} = 3x^2 - 4$

$\frac{a}{4} + \frac{7x}{5} = 3$

$3x^2 - y = 4a$

$3x^2 = 4a + y$

$x^2 = \frac{4a+y}{3}$

$x = \sqrt{\frac{4a+y}{3}}$

$\frac{2A-B}{5} + 4 = 3x^2$

$\frac{1}{3}\left(\frac{2A-B}{5} + 4\right) = x^2$

$5A + 28X = 60$

$28X = 60 - 5A$

$X = 60 - 5A$

$x = \frac{60 - 5A}{28}$

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odds only

Rearranging more complex formulae

A ball has a volume of $400cm^3$.
Find its radius.

$V = \frac{4}{3}\pi r^3$

$400 = \frac{4}{3}\pi r^3$

$1200 = 4\pi r^3$

$\frac{1200}{4\pi} = r^3$

$\frac{300}{\pi} = r^3$

$r = \sqrt[3]{\frac{300}{\pi}}$

Make x the subject:

$$y = \frac{x+4}{2x-7}$$

$y(2x-7) = x+4$

$2xy - 7y = x + 4$

$2xy - x = 4 + 7y$

$x(2y-1) = 4+7y$

$x = \frac{4+7y}{2y-1}$

Make cos A the subject:

$a^2 = b^2 + c^2 - 2bc\cos A$

$a^2 + 2bc\cos A = b^2 + c^2$

$2bc\cos A = b^2 + c^2 - a^2$

$\cos A = \frac{b^2+c^2-a^2}{2bc}$

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C4c) $xt^2 - \frac{k(t+1)}{x} = 0$

$(\times x)$ $x^2t^2 - k(t+1) = 0$

$x^2t^2 = k(t+1)$

$x^2 = \frac{k(t+1)}{t^2}$

$x = \sqrt{\frac{k(t+1)}{t^2}}$

$x = \frac{\sqrt{k(t+1)}}{t}$

$x(xt^2)$

x^2t^2

C6b $t = \frac{8(p+q)}{pq}$

$tpq = 8(p+q)$

$tpq = 8p + 8q$

$tpq - 8q = 8p$

$q(tp - 8) = 8p$

$q = \frac{8p}{tp - 8}$

Homework
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