# Harder Algebra Worksheet

$$\frac{\left(\frac{1}{2}\right)^{-2} \times 2^{-2}}{\left(\frac{1}{2}\right)^{0}} = \tag{1}$$

Solve the inequality $-2x^2 + x + 2 \leq 0$ (2)

$$\frac{-4\left(\frac{1}{\sqrt{7}} + \frac{1}{\sqrt{5}}\right)}{\sqrt{7}} = \tag{3}$$

What is the $n$-th term in the sequence $7, 13, 27, 49, 79$? (4)

AB=11.74, AC=5.52, ABC=27°. ACB is obtuse. Find the area of triangle ABC. (5)

Solve the simultaneous equations

$$\begin{aligned} -4x + 8y &= 1 \\ -x - 2y &= 2 \end{aligned} \tag{6}$$

$f(x) = 3x^2 - x - 3$. Find the turning point of $f(x)$, the roots of $f(x) = 0$ and the turning point of the function $-6f(x-8) + 5$. (7)

Rearrange to make $x$ the subject in $y = \dfrac{9 - 5x}{8 - 7x}$ (8)

$f(x) = -2x + 2,\ g(x) = \dfrac{1}{-x+3}$. Solve $f(g(x)) = g(f(x))$ (9)

$$\frac{2 + 2\sqrt{3}}{4 + \sqrt{7}} = \tag{10}$$

$$4\left(\frac{1}{\sqrt{6}} + \frac{1}{2}\right)^{-1} = \tag{11}$$

Solve the simultaneous equations

$$\begin{aligned} x^2 + y^2 &= 1 \\ 4x - 4y &= 1 \end{aligned} \tag{12}$$

Find the circumcentre of the triangle with vertices

$A = (-2, -2)$, $B = (9, 3)$ and $C = (8, 8)$ (13)