


27th April	
<p>Simplify</p> $\sqrt{242} - \sqrt{98} + 4\sqrt{8}$ $11\sqrt{2} - 7\sqrt{2} + 8\sqrt{2}$ $12\sqrt{2}$	 CorbettmOths
<p>A circle has equation <math>(x + 8)^2 + (y - 4)^2 = 25</math> <math>r = 5</math>  <math>(-8, 4)</math></p> <p>Is the point <math>(-5, 3)</math> inside or outside the circle?</p> $\sqrt{3^2 + 1^2} = \sqrt{10}$	$\sqrt{10} < 5$ $\therefore \text{inside the circle}$
<p>Solve the simultaneous equations</p> $x + y + 2z = 40 \quad \text{--- (1)}$ $2x - y + 3z = 5 \quad \text{--- (2)}$ $5x + 4y - 2z = 0 \quad \text{--- (3)}$ $\text{(1) + (2)} \quad 3x + 5z = 45 \quad \text{--- (4)}$ $4 \times \text{(2)} \quad 8x - 4y + 12z = 20 \quad \text{--- (5)}$ $\text{(5) + (3)} \quad 13x + 10z = 20 \quad \text{--- (6)}$ $2 \times \text{(4)} \quad 6x + 10z = 90 \quad \text{--- (7)}$	$\text{(6) - (7)}$ $7x = -70$ $\boxed{x = -10}$ <p>sub <math>x = -10</math> into (1)</p> $-60 + 10z = 90$ $10z = 150$ $\boxed{z = 15}$ $-10 + y + 30 = 40$ $\boxed{y = 20}$
<p><math>f(x) = 6x^2 - 30x + 2 - 2x^3</math></p> <p>Show that <math>f(x)</math> is a decreasing function for all values of <math>x</math>.</p> $f'(x) = -6x^2 + 12x - 30$ $= -6[x^2 - 2x + 5]$ $= -6[(x-1)^2 - 1 + 5]$ $= -6[(x-1)^2 + 4]$	$-6(x-1)^2 - 24$ <p>As <math>-6(x-1)^2 \leq -6</math></p> $-6(x-1)^2 - 24 \text{ is always negative.}$