

MF2P FINAL EXAM JUNE 2014

Knowledge and Understanding

- 1) Factorise : $x^2 - 3x - 10$
- 2) Expand : $(x - 1)(3x + 4)$
- 3) Calculate the surface area and volume of a regular cone.
- 4) Determine the equation of a line which has slope 4 and passes through $(3, 6)$

Communication

- 1) Solve the linear system defined by $y = 4x - 3$ and $y = -2x + 8$ by both a graphical method and a linear method.

Application

- 1) The flight of a ball is modelled with the equation $h = t^2 - 5t + 3$

I) Sketch the parabola of the equation

Determine the :

- ii) initial height of the ball
- iii) Maximum height reached, and when
- iv) the landing time of the ball.

- 2) A grain silo is composed of a cylindrical shape (height 5 metres) topped by a semi-sphere (diameter 4 metres). Determine the :

I) minimum amount of aluminum in m^2 needed to make the silo.

ii) how much grain the silo can hold in cm^3

- 3) Two competing cell phone plans are modelled with the equations $C = 0.40m + 10$ and $C = 0.30m + 20$ where $C =$ cost and $m =$ minutes used . Determine :

I) at what point the plans will cost the same

ii) Which plan would be cheaper if someone needed to use the phone for 100 minutes a month ?

Thinking / Inquiry

- 1) Explain why the lines $y = 3x - 1$ and $y = 4x - 5$ cannot intersect