Formulae Sheet:

Distance between \((x_1, y_1)\) and \((x_2, y_2)\):
\[ d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2} \]

Roots of \(ax^2 + bx + c = 0\) are:
\[ x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \]

Product rule:
\[ (uv)' = u' \cdot v + u \cdot v' \]

Chain rule:
\[ \frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx} \]

Quotient rule:
\[ \left(\frac{u}{v}\right)' = \frac{u' \cdot v - u \cdot v'}{v^2} \]

Compounding interest: if \$P\$ is invested for \(t\) time periods at an interest rate of \(r\) per period then the final balance \(F\) is given by:
\[ F = P(1 + r)^t \]

Continuously compounding interest: if \$P\$ is invested for \(t\) years at an interest rate of \(r\) per annum, compounding continuously, then the final balance \(F\) is given by:
\[ F = Pe^{rt} \]