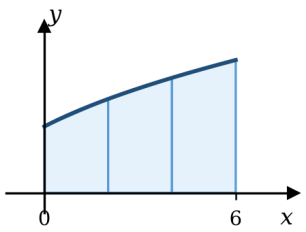
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|---|---|

**1** Write down the exact values of
(a) sec 120° (b) sec 135°

**2** Here are 5 values: 10, 12, 12, 15, 19
Find the mean and the standard deviation, to 3 s.f.

**3** A circle has equation $x^2 + y^2 + 8x - 65 = 0$.
Find the centre and the radius of the circle.

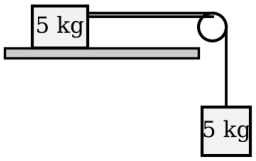
**4** The diagram shows the curve $y = \sqrt{x + 2}$ from x = 0 to x = 6 divided into 3 strips of equal width.
Use the trapezium rule with these strips to estimate the shaded area to 3 s.f.




**5** $f(x) = x^3 - 2x^2 - x + 2$
(a) Show that (x + 1) is a factor of f(x).
(b) Factorise f(x) completely.

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**6** A 5 kg particle on a smooth horizontal table is joined by a light string over a smooth pulley to a hanging 5 kg particle, as shown. The system is released from rest. Take g = 9.8 m $s^{-2}$. Find the tension.




**7** Find the set of values of x satisfying both $2x + 5 > -1$ and $x^2 - 36 < 0$.

**8** Two forces $(-2\mathbf{i} + 7\mathbf{j})$ N and $(8\mathbf{i} - \mathbf{j})$ N act on a particle of mass 3 kg. No other horizontal forces act. Find the acceleration of the particle as a vector in terms of $\mathbf{i}$ and $\mathbf{j}$.

**9** X ~ B(15, p). $H_0$: p = 0.3, $H_1$: p > 0.3.
Find the critical region for a test at the 10% significance level.

**10** Use $u = x^2 + 1$ to evaluate

$$\int_0^1 2x(x^2 + 1)^2 \, dx.$$