

Unit 2 Practice Assessment

Please read the following instructions

Try and keep within the allocated time limit of **45 minutes**

To pass the assessment, you must pass each of the outcomes

Each outcome has a minimum threshold you must reach to pass

The thresholds for unit 2 are

		Factor / rem theorem		Basic Integration		Trig Equ.ns & formulae		The Circle	
		test	retest	test	retest	test	retest	test	retest
threshold		4	4	8	8	9	9	10	10
maximum		6	6	11	11	12	12	14	14

Note that you are allowed one retest of the outcome(s) you failed. (It is only in exceptional circumstances that a candidate is allowed a second retest – so please ensure you pass first time round!)

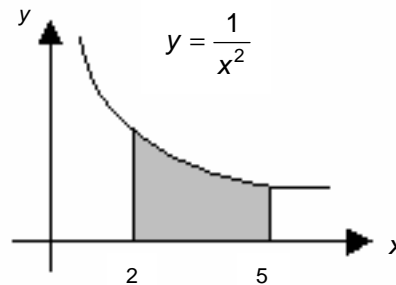
Unit 2 Practice Assessment

Outcome 1

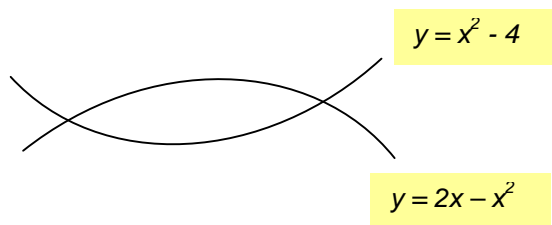
1. Show $(x-1)$ is a factor of $2x^3 - 3x^2 - 2x + 3$. Hence or otherwise fully factorise $f(x) = 2x^3 - 3x^2 - 2x + 3$. 4
2. Show the quadratic $2x^2 + 5x + 9$ has no real roots. 2

Outcome 2

3. Integrate $\int 5x - 2 - \frac{6}{\sqrt{x}} dx$ 3



4. Calculate the shaded area in the diagram 5
5. Write down the integral which represents the area enclosed by the two curves below. 3



Outcome 3

6. Solve algebraically the equation $2\cos(3x) = \sqrt{3}$ for $0 < x < 180^\circ$ 3
7. Given $\cos(A) = 3/5$ and $\sin(B) = 5/13$ find the exact value of $\cos(A+B)$ 4
8. Express $\sin(x)\cos(\frac{p}{3}) + \cos(x)\sin(\frac{p}{3})$ in the form $\sin(A+B)$ and hence solve $\sin(x)\cos(\frac{p}{3}) + \cos(x)\sin(\frac{p}{3}) = 1$ for $0 < x < 2p$ 5

Outcome 4

- 9a) Write down the equation of the circle with centre $(-4,5)$ and radius 5 2
- b) Write down the centre and radius of the circle with equation $x^2 + y^2 - 6x + 6y - 18 = 0$ 3
10. Show that the line $y = 4x + 7$ is a tangent to the circle $x^2 + y^2 - 6x - 4y - 4 = 0$ 5
11. Find the equation of the tangent to $x^2 + y^2 + 20y + 20 = 0$ at the point $(8, -6)$ 4