

7		<p><b>Summary of marks:</b>          Attempt find <math>x</math> at intersection of curves  <math>x = 1</math>          Correct integral, any limits          Correct numerical result          Attempt area of part or all of <math>2 \times 2</math> square          Wholly correct method  <math>\frac{44}{3}</math></p>	<p><b>M1</b>  <b>A1</b>  <b>M1</b>  <b>A1</b>  <b>M1</b>  <b>M1</b>  <b>A1</b>  <b>[7]</b></p>	<p><b>3.1a</b>  <b>1.1</b>  <b>3.1a</b>  <b>1.1</b>  <b>1.1</b>  <b>2.1</b>  <b>1.1</b></p>	<p>Can be implied            from correct limits</p>	
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Question	Answer	Mks	AO	Guidance	
	<p><b>Examples of methods:</b></p> <p><u>Method 1</u>  <math>3 - 2x^2 = x</math>  <math>2x^2 + x - 3 = 0</math>  <math>x = 1</math>  <math>\int_0^1 (3 - 2x^2) dx</math>                      or <math>\int_{-1}^1 (3 - 2x^2) dx</math>  <math>= \left[ 3x - \frac{2x^3}{3} \right]_0^1</math>                      or <math>\left[ 3x - \frac{2x^3}{3} \right]_{-1}^1</math>  <math>= \frac{7}{3}</math>    or <math>\frac{14}{3}</math>  <math>8 \times \frac{7}{3} - 1 (= \frac{4}{3})</math>                      or <math>8 \times \frac{14}{3} - 2 (= \frac{8}{3})</math>  <math>8 \times \frac{4}{3} + 4</math>                                      or <math>4 \times \frac{8}{3} + 4</math>  <math>= \frac{44}{3}</math></p> <p><u>Method 2</u>  <math>3 - 2x^2 = x</math>  <math>x = 1</math>  <math>\int_1^3 \left(\frac{y-3}{2}\right)^{\frac{1}{2}} dy</math>  <math>= \dots\dots</math>  <math>= \frac{4}{3}</math>  <math>\frac{4}{3} + \frac{1}{2} (= \frac{11}{6})</math>  <math>8 \times \frac{11}{6}</math>  <math>= \frac{44}{3}</math></p>	<p><b>M1</b></p> <p><b>A1</b></p> <p><b>M1</b></p> <p><b>A1</b></p> <p><b>M1</b></p> <p><b>M1</b></p> <p><b>A1</b></p> <p><b>M1</b></p> <p><b>A1</b></p> <p><b>M1</b></p> <p><b>A1</b></p> <p><b>M1</b></p> <p><b>M1</b></p> <p><b>A1</b></p>		<p>Ignore other root</p> <p>Correct integrand with any limits</p> <p>Attempt area above <math>y = 1</math> or above <math>y = x</math></p> <p>Complete correct method</p> <p><u>Method 3</u>  <math>3 - 2x^2 = x</math>  <math>x = 1</math>  <math>\int_0^1 (3 - 2x^2 - 1) dx</math>  <math>= \left[ 2x - \frac{2x^3}{3} \right]_0^1</math>  <math>= \frac{4}{3}</math>  <math>\frac{4}{3} + \frac{1}{2} (= \frac{11}{6})</math>  <math>8 \times \frac{11}{6}</math>  <math>= \frac{44}{3}</math></p>	<p>or <math>3 - 2x^2 = -x</math>  <math>2x^2 - x - 3 = 0</math>  <math>x = -1</math></p> <p>or <math>8 \times \frac{14}{3} - 2 (= \frac{11}{3})</math></p> <p><math>4 \times \frac{11}{3}</math></p> <p>Other correct methods may be seen</p>