

Questions

- 1.2 Given:  $2^x + 2^{x+2} = -5y + 20$
- 1.2.1 Express  $2^x$  in terms of  $y$ . (2)
- 1.2.2 How many solutions for  $x$  will the equation have if  $y = -4$ ? (2)
- 1.2.3 Solve for  $x$  if  $y$  is the largest possible integer value for which  $2^x + 2^{x+2} = -5y + 20$  will have solutions. (3)

Answers

1.2.1	$2^x + 2^{x+2} = -5y + 20$ $2^x(1 + 2^2) = -5y + 20$ $2^x = \frac{-5y + 20}{5}$ <p><b>OR</b></p> $2^x = -y + 4$	<p>✓ <math>2^x</math> common factor</p> <p>✓ answer</p> <p>(2)</p>
1.2.2	<p>If <math>y = -4</math>,</p> $2^x + 2^{x+2} = -5y + 20$ $2^x + 2^{x+2} = 40$ $2^x(1 + 2^2) = 40$ $2^x = 8$ $2^x = 2^3$ $x = 3$	<p>✓ substitution</p> <p>✓ answer</p> <p>(2)</p>
1.2.3	$-y + 4 > 0$ $y < 4$ <p>Largest integer value of <math>y</math> is 3</p> $2^x = -3 + 4$ $2^x = 1$ $x = 0$	<p>✓ <math>-y + 4 &gt; 0</math></p> <p>✓ <math>y = 3</math></p> <p>✓ <math>x = 0</math></p> <p>(3)</p> <p><b>[21]</b></p>