

Birkdale 16+ solutions

1) $341/9990$

2) $x = \frac{8}{3} = 2\frac{2}{3}$

3) $(3x + 1)(x - 5) = 0$ so $x = -\frac{1}{3}$ or 5

4) a) $r = \frac{v+sx}{x-p}$

b) $r = \frac{ab}{a+b}$

5) a) $\sqrt{3}$

b) $\sqrt{3}$

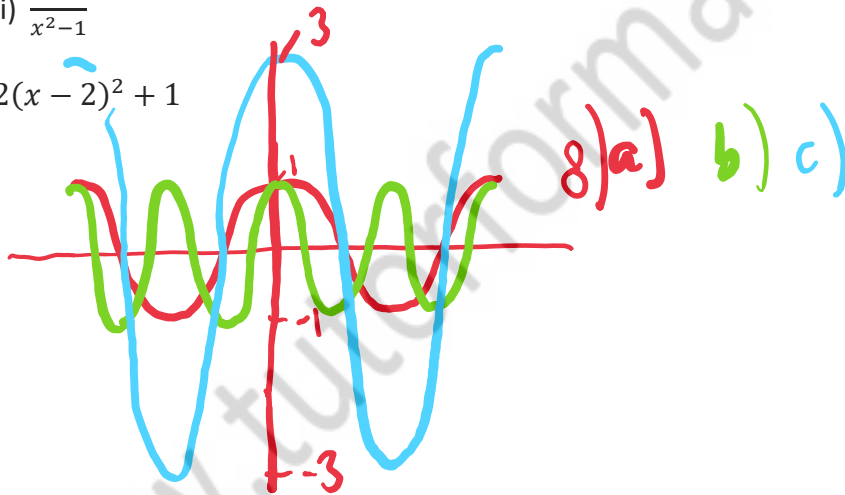
c) $2(\pi - \sqrt{3})$

6) a) $\frac{1}{x+3}$

b) i) $(x + 1)(x - 1)$

ii) $\frac{4}{x^2-1}$

7) $2(x - 2)^2 + 1$



9) a) $\frac{17}{40}$

b) $\frac{12}{17}$

10) Any odd number is $2n+1$. $(2n + 1)^2 = 4n^2 + 4n + 1 = 2(2n^2 + 2n) + 1$, which is one more than an even number, so odd.

11) The last digit of successive powers of 3 ($3^1, 3^2$, etc) are 3,9,7,1,3,9,7,1, which is a repeating pattern of 4, with every multiple of 4 having last digit 1. So 3^{2012} has last digit 1 and then 3^{2013} has last digit 3 and 3^{2014} has last digit 9.