

C4 - June 14

1)  $\frac{3-x^3}{1-x^2}$  or  $\frac{3-x^3}{(1+x)(1-x)}$

2)  $81.7^\circ$

3i)  $1+x+\frac{3}{2}x^2$

ii)  $\frac{11}{2}$

4)  $\frac{1}{2}\ln 2$

5) either  $s = \frac{1}{5}$   $t = -\frac{6}{5}$

or  $s = -\frac{4}{7}$   $t = -\frac{3}{7}$

or  $s = \frac{17}{4}$   $t = \frac{3}{2}$

~~379~~ Check 3rd equation which is not consistent so skew

ii) Direction vectors are multiples  $\begin{pmatrix} -1 \\ \frac{1}{2} \\ 2 \end{pmatrix} \times -2 = \begin{pmatrix} 2 \\ -4 \\ -4 \end{pmatrix}$

So the lines are either parallel or identical.

Not identical since A goes through  $(1, 4, 1)$  but

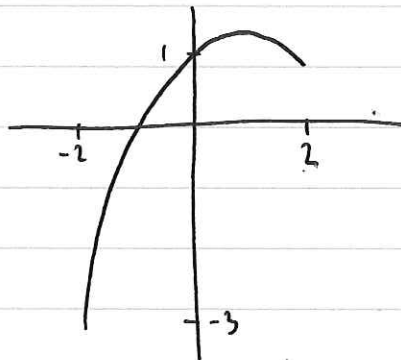
C goes through  $(1, 15, 1)$ , so they are parallel.

6)  $P(-2, 2)$   $Q(10, 2)$

7i)  $(1, \frac{3}{2})$

ii)  $y = 1 - \frac{x^2}{2} + x$

iii)  $-2 \leq x \leq 2$



8ii)  $32\ln 4 - 18\ln 3 - \frac{20}{3}$

9)  $\frac{1}{2}\ln(\frac{3}{2}) + \frac{1}{3}$

10ii)  $h = \sqrt[3]{\frac{-27t + 729}{4000} + \frac{729}{8}}$

iii) 71 minutes.