

## EXAM 2 ANSWERS

### VERSION A

①  $f(x) = \frac{1}{3} x (x-2) (x+4)^2$

②  $(-\infty, \frac{2}{3}) \cup (\frac{5}{2}, \infty)$

③ Domain  $(-\infty, 3) \cup (3, \infty)$

x-intercept  $(\frac{3}{4}, 0)$

y-intercept  $(0, \frac{1}{2})$

Horizontal asymptote  $y=2$

Vertical asymptote  $x=3$

④  $x^2 + 2x - 4 + \frac{5}{2x+3}$

⑤ Roots are  $x=2$ ,  $x=2-\sqrt{11}$ ,  $x=2+\sqrt{11}$

Hint: From the graph (or table) we see that  $x=2$  is a root

Divide by  $x-2$  to get  $x^2 - 4x - 7$

Solve  $x^2 - 4x - 7 = 0$  using the quadratic formula

⑥  $f(x) = (x+6)(x^2 - 4x + 13)$

⑦ Domain  $(-\infty, -2) \cup (-2, \infty)$

x-intercept  $(4, 0)$

y-intercept  $(0, -4)$

No asymptotes [  $f(x)$  has a hole at  $x=-2$  ]

## EXAM 2 ANSWERS

### VERSION B

①  $f(x) = \frac{1}{8} (x-2)(x+1)(x-3)^2$

②  $(-\infty, -\frac{5}{2}) \cup (\frac{1}{3}, \infty)$

③ Domain  $(-\infty, -\frac{1}{3}) \cup (-\frac{1}{3}, \infty)$

x-intercept  $(2, 0)$

y-intercept  $(0, -3)$

Horizontal asymptote  $y = \frac{1}{2}$

Vertical asymptote  $x = -\frac{1}{3}$

④  $x^2 - x + 5 + \frac{6}{3x+1}$

⑤ Roots are  $x = -1$ ,  $x = 4 + 2\sqrt{3}$ ,  $x = 4 - 2\sqrt{3}$

Hint: From the graph (or table) we see that  $x = -1$  is a root

Divide by  $x+1$  to get  $x^2 - 8x + 4$

Solve  $x^2 - 8x + 4 = 0$  using the quadratic formula

⑥  $f(x) = (x+4)(x^2 - 6x + 34)$

⑦ Domain  $(-\infty, -3) \cup (-3, \infty)$

x-intercept  $(4, 0)$

y-intercept  $(0, -4)$

No asymptotes ( $f(x)$  has a hole at  $x = -3$ )