Part A - Multiple Choice

Question	Answer	Question	Answer
1	D	9	A
2	A	10	B
3	B	11	C
4	B	12	D
5	C	13	B
6	C	14	C
7	B	15	B
8	A	16	D

Part B - Applications

1. Both ends point downward. Intercepts: **(-2, 0)**, crossing with flattening; **(1, 0)**, crossing; **(0, 8)**.

2. -120 (for equally spaced x-values with a step of 1).

3a. 1.4 m/s 3b. 3.15 m/s

4. $\mathbf{y = 3x(x + 3)(x - 2)^2}$

5a. Vertical stretch by 2; reflection in the y-axis; horizontal stretch by 2; translation 3 units right and 1 unit up.

5b. $\mathbf{g(x) = -(1/4)(x - 3)^3 + 1.}$
Decreasing cubic through **(1, 3), (3, 1), (5, -1)**; left end up, right end down.

Part C - Communication

1. g(x) = -(1/3)f(4x) - 2

2.

Function	Symmetry	End behaviour
a) $3x^3 - 8x^4$	Neither	Both ends down: Q3 → Q4
b) $5x + 6x^3 + x^5$	Odd	Left down, right up: Q3 → Q1
c) $x^4 - 3x^2 + 2$	Even	Both ends up: Q2 → Q1

Part D - Thinking, Inquiry and Problem Solving

1. g(x) is f(x) translated **2 units right**. They have the **same shape and end behaviour**.

2. Points of intersection: **(-2, -6), (0, 0), (1, 0).**