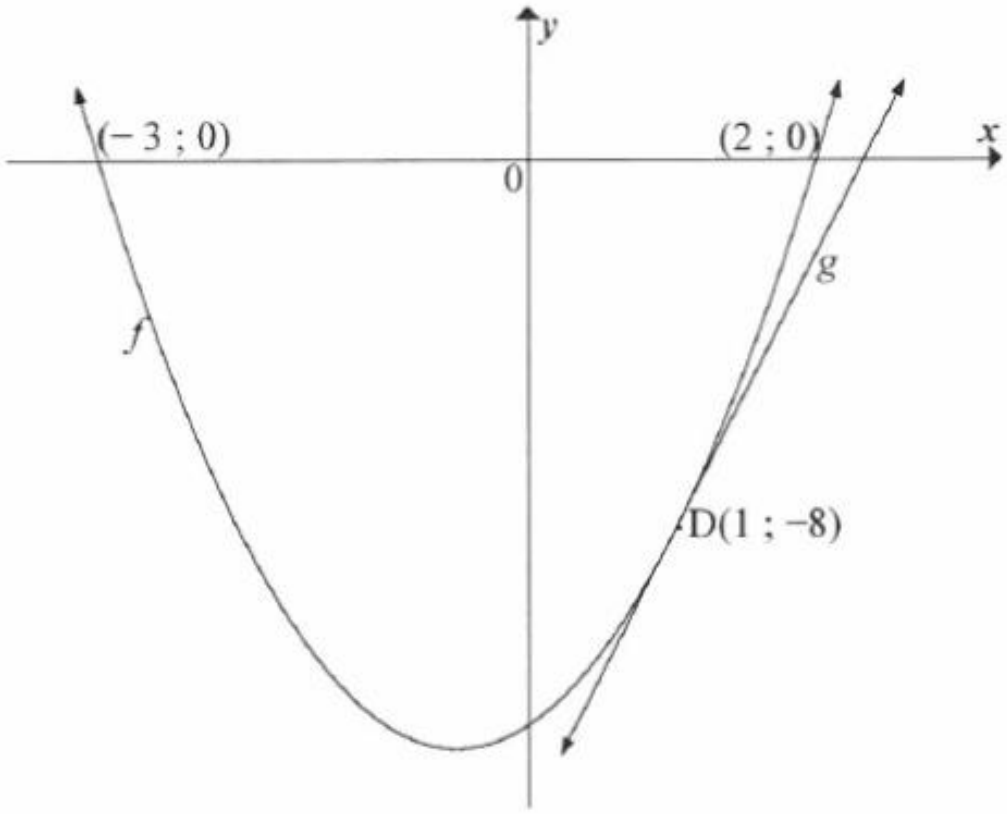
INFORMAL TEST 2

GRADE 12

The graphs of $f(x) = ax^2 + bx + c$; $a \neq 0$ and $g(x) = mx + k$ are drawn below.

D(1 ; – 8) is a common point on f and g.

- f intersects the x-axis at (– 3 ; 0) and (2 ; 0).
- g is the tangent to f at D.



6.1 For which value(s) of x is $f(x) \leq 0$? (2)

6.2 Determine the values of a, b and c. (5)

6.3 Determine the coordinates of the turning point of f. (3)

6.4 Write down the equation of the axis of symmetry of h if $h(x) = f(x - 7) + 2$. (2)

6.5 Calculate the gradient of g. (3)

ANSWERS

1	$-3 \le x \le 2$	✓ critical values/ *kritiese waardes* ✓ notation/*notasie* (2)
2	$f: \quad y = a(x - x_1)(x - x_2)$ $y = a(x+3)(x-2)$ $-8 = a(1+3)(1-2)$ $-8 = -4a$ $2 = a$ $y = 2(x+3)(x-2)$ $y = 2x^2 + 2x - 12$ $b = 2$ and/*en* $c = -12$ **OR/*OF***	✓ $y = a(x+3)(x-2)$ ✓ substitute/*vervang* $(1 ; -8)$ ✓ $a = 2$ ✓ $b = 2$ and/*en* ✓ $c = -12$ (5)
.3	$x = -\frac{b}{2a}$ $x = -\frac{2}{2(2)} = -\frac{1}{2}$ $y = \frac{1}{2} - 1 - 12$ $y = -12\frac{1}{2}$ $\text{TP}\left(-\frac{1}{2} ; -12\frac{1}{2}\right)$	✓ $x = -\frac{1}{2}$ ✓ substitution/*substitusie* ✓ *y*-value/*waarde*
6.4	$x = \frac{13}{2}$	✓✓ answer/i (2)
6.5	$f'(x) = 4x + 2$ $m = f'(1) = 4(1) + 2$ $m = 6$	✓ $y' = 4x + 2$ ✓ subst. $x = 1$ ✓ answer/*antwoord* (3) **[15]**