**Self-assessment answers: 13 Basic integration and its applications**

**1. **



*[6 marks]*

**2. ** *[5 marks]*

**3. **

⇒ 

⇒ 

⇒ *a* = 2.36 (GDC) *[6 marks]*

**4.** (a) *f* (*x*) = *x*2 – 6*x* + *c*

Passes through (2, 0) ⇒ 0 = 4 – 12 + *c* ⇒ *c* = 8

*f* (*x*) = *x*2 – 6*x* + 8

(b) At (2, 0), *f* ′( *x*) = −2

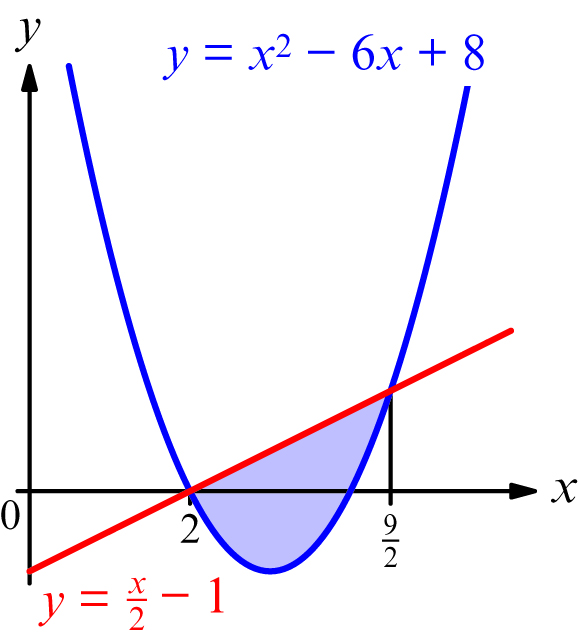
So normal has gradient  and therefore has equation *y* =  − 1.

(c) Normal meets the curve when  − 1 = *x*2 – 6*x* + 8.

⇒ *x*2 − *x* + 9 = 0

⇒ (*x* – 2) = 0

Intersections are (2, 0) and .



Area enclosed is given by 





*[13 marks]*