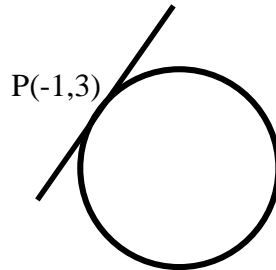1. Find f'(x) where $f(x) = (2x - 5)^5$.

2. The diagram shows a circle with equation $(x - 1)^2 + (y + 4)^2 = 53$ passing through the point P(-1, 3). Find the equation of the tangent at P.

P(-1,3)

3. If $\text{Tan } x° = \dfrac{4}{3}$ and $0 < x° < 90$, show that the **exact** value of $\text{Sin } (x + 30)° = \dfrac{4\sqrt{3}+3}{10}$.

4. Evaluate $\int_1^2 x^2 - 6x + 1 \ dx$

5. A recurrence relation exists where $u_{n+1} = au_n + b$ where $u_0 = 3$, $u_1 = 5$ and $u_2 = 11$. Find the values for a and b.

6. The graph of $y = f(x)$ is shown, with turning points at (0,1) and (2,-3).

y

x
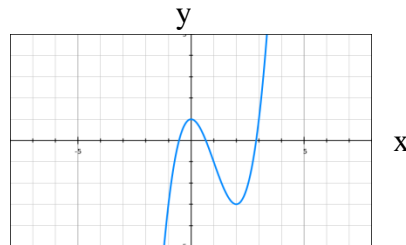
   Sketch the graph of $y = f'(x)$.

7. Solve $½ \text{Log}_4 16 + \text{Log }_4 x = 3$.

8a. Two functions f and g are defined as $f(x) = 2x + 5$ and $g(x) = 3x + 2$. Find $g(f(x))$.

8b. Find $h(x)$ where $h(x) = g^{-1}(f(x))$

9. Express $4\text{Sin } x + \text{Cos } x$ in the form $k\text{Sin}(x + \alpha)$ $0 \le \alpha \le 360$.

10. Find the equation of the tangent to the curve $y = x^3 - 3x^2 + x - 2$ when $x = 1$.