Derivatives pevious test

Maths 3c

Differentiation techniques.

Name:_____

Derive these functions.

1. $f(x) = x^3$

2. $g(x) = 2x^{12}$

3. $h(x) = x^2 + 3x$

4. $i(x) = 6x^5 + \frac{1}{3}x^3 + 4x^2$

5. $j(x) = x^2 + 5x + 6 + \frac{1}{x}$

6. $k(x) = \frac{1}{x} + \frac{1}{x^2} + \frac{1}{2x^3}$

7. $l(x) = \sqrt{x}$

8.

$$m(x) = \sqrt[3]{x}$$

9.

$$n(x) = \frac{1}{\sqrt[4]{x}}$$

10.

$$o(x) = 5x^4 - \sqrt{x} - \frac{1}{\sqrt{x}}$$

11.

$$p(x) = x^3 + \frac{1}{x^2} + \frac{1}{\sqrt[3]{x^2}}$$

12.

$$q(x) = \sin x$$

13.

$$r(x) = \cos x$$

14.

$$s(x) = \ln x$$

15.

$$t(x) = x^3 \cdot \cos x$$

16.

$$u(x) = (2x^2 + 3x) \cdot \sin x$$

17.

$$v(x) = \sin x \cdot \ln x$$

18.

$$w(x) = \frac{x^2 + 3x + 6}{\ln x}$$

19.

$$x(x) = \frac{\cos x}{\sin x}$$

20.

$$y(x) = \frac{x^3 + 3x^2 + 4}{x^2 + 2x + 2}$$

21.

$$z(x) = \cos(6x^3)$$

22.

$$a(x) = \sin(\ln x)$$

23.

$$b(x) = \cos(\cos x)$$

24.

$$c(x) = \ln(x^3 + 2x^2)$$

25.

$$d(x) = \cos^3 x$$

26.

$$e(x) = \sqrt{4x^4}$$

27.

$$af(x) = \sqrt{\cos x}$$

28.

$$ag(x) = (\cos(\ln x))^3$$

29.

$$ah(x) = \ln\left(\sqrt{\sin x}\right)$$

30.

$$ai(x) = \sin^3 x \cdot \ln x$$

31.

$$aj(x) = \sqrt{\sin(\sqrt{x})} \cdot \ln(\sqrt{x})$$

32.

$$ak(x) = \ln(\sqrt{x}) \cdot 3x^4$$