$$f(P(x)) = x$$

$$f'(P(x)) \times P'(x) = 1$$

$$P'(x) = \frac{1}{f'(P(x))}$$

$$g\left(f(x)^{-1}\right)$$

Let $f^{-1}(x) = P(x)$

$$\frac{d\left(g(P(x))\right)}{dx}$$

$$g'(P(x))\,P'(x)$$

$$f(1) = 2$$

$$f^{-1}(2) = 1$$

$f(2) = 1$

$$g'(1) \times \frac{1}{f'(1)}$$

$g'(1) = 3x^2 - 1 = 2$

$f'(1) = 3x^2 + 1 = 4$

$$f(x) = x^3 + x = 2$$

$$x^3 + x - 2 = 0$$

$$x = 1$$

$$(x-1)\underbrace{(x^2 + x + 2)}_{\text{Imagnary}} = 0$$

$$P(2) = 1$$

$$\text{So} = g'(-1) \times \frac{1}{f'(-1)}$$

$$g'(-1) = 3x^2 - 1 = 2$$

$$f'(-1) = 3x^2 + 1 = 4$$

$$= 1/2$$

$$f(x) = x^3 + 3 = 2$$

$$x^3 = -1$$

$$x = -1$$

So $\boxed{f(2) = -1}$

$$f(p(x)) = x$$

$$f'(p(x)) \times p'(x) = 1$$

$$p'(x) = \frac{1}{f'(p(x))}$$

$$g\left(f(x)^{-1}\right)$$

Let $f^{-1}(x) = P(x)$

$$\frac{d\left(g(P(x))\right)}{dx}$$

$$g'(P(x))\,P'(x)$$

$g(f(x))$

Let $f^{-1}(x) = t(x)$

$$\frac{d\, g(t(x))}{dx}$$

$g'(t(x)) \times t'(x)$