

$$f(r) = a + ra - b = 0 \Rightarrow b = -14$$

$$f'(r) = r'(r)r' + a = 0$$

$$\Rightarrow a = -12$$

$$b - a = -14 + 12 = -2$$

$$f'(u) = n \sin^{n-1}(u) \cdot r' \cdot \cos(u^{-r})$$

$$\frac{n r^{n-1} x^{n-1} \cdot r' \cdot \cos(u^{-r})}{1 - n \cos u}$$

$$\frac{\sqrt{n} + 1}{\sqrt{n} - 1} = r \Rightarrow n = 9$$

$$f'(x) = \frac{\frac{1}{\sqrt{x}}(\sqrt{x}-1) - \frac{1}{\sqrt{x}}(\sqrt{x}+1)}{(\sqrt{x}-1)^2}$$

$$f'(9) = -\frac{1}{12}$$

$$\Rightarrow (f^{-1})'(r) = -12$$

$$\frac{f(0) - f(-1)}{0 + 1} = \frac{1 + 12a - 1}{1} = -11$$

$$\Rightarrow a = -\frac{1}{12}$$

$$f'(-1) = r'(1+1)^r \cdot r' \cdot \left(\frac{1}{r} + 1\right) + \frac{-1}{r} \cdot 1(1+1)^r = 1$$

$$\frac{1 \cdot (-1) - 0}{\frac{\pi}{r} - \frac{\pi}{2}} = \frac{-1}{\frac{\pi}{r} - \frac{\pi}{2}}$$

$$\frac{1 - 0}{\frac{\pi}{r} - \frac{\pi}{2}}$$

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$$f'\left(\frac{\pi}{2}\right) = \left[r \tan \frac{\pi}{2} \left(1 + \tan \frac{\pi}{2}\right) - \sqrt{r} \sin \frac{\pi}{2} \right] f'(r)$$

$$= r f'(r) = \sqrt{r} \Rightarrow f'(r) = \frac{\sqrt{r}}{r}$$

$$f - r g(r) = -\cos^2 u$$

$$\Rightarrow (f - r g)'(u) = +2 \cos u \sin u = \sin 2u$$

$$(f - r g)\left(\frac{\sqrt{\pi}}{2}\right) = \frac{\sqrt{r}}{r}$$

$$f'\left(\frac{\sqrt{\pi}}{2}\right) = 2\sqrt{ra}$$

$$f'\left(\frac{\sqrt{\pi}}{2}\right) = -2\sqrt{ra}$$

$$f'\left(\frac{\sqrt{\pi}}{2}\right) - f'\left(\frac{\sqrt{\pi}}{2}\right) = 2\sqrt{ra} = 2\sqrt{r} \Rightarrow a = \frac{1}{r}$$

$$f'(2) = -2a + r$$

$$f'(2) = -a$$

$$-2a + r = -1 \Rightarrow a = \frac{r}{2}$$

$$f'(2) = -\frac{r}{2}$$

$$\frac{an-1}{r^{n+1}} = \frac{n+a}{r}$$

$$\Rightarrow r^{n+1} + (14 - 5a) r + 12 = 0$$

$$\Delta = 0$$

$$b^2 - 122 = 0 \Rightarrow b = \pm 11$$

$$14 - 5a = -12 \Rightarrow a = 6$$