

#source openstax calculus volume 1 section 2.4 exercises

1 | 131

$$x \leq 0 \Rightarrow \boxed{\text{infinite}}$$

2 | 132

no discontinuities

3 | 140

$$\boxed{\text{Infinite discontinuity}} \left(\frac{-1}{0} \right)$$

4 | 141

$$\boxed{\text{Continuous}} \left(\frac{\cancel{(2u-1)}(3u+2)}{\cancel{2u-1}} \right)$$

5 | 145

$$3x + 2 = 2x - 3 \Rightarrow \boxed{x = -5}$$

6 | 150

The function is not continuous at $x = 2$

7 | 152

7.1 | a

$$\cos t = t^3$$

7.2 | **b**

$$f(a) = 1$$

$$g(a) = 0$$

Let $f(x) = \cos x$ and $g(x) = x^3$. For $a = 0$ and $b = \frac{\pi}{2}$: $f(b) = 0$ $g(b) = \frac{\pi^3}{8} > 1$ $\$ \$$ Because these functions each

$$g(b) = \frac{\pi^3}{8} > 1$$

traverse $0 \leq y \leq 1$ over the interval $0 \leq x \leq \frac{\pi}{2}$ in opposite directions and are continuous over that range, they must cross somewhere in that range.

7.3 | **c**

$$x = 0.8655 \pm 0.005$$

8 | **164**

It's true.