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1.

$x<3$, $f(x) = 5-x$ $\quad f'(x) = -1$

$x>3$, $f(x) = x-1$ $\quad f'(x) = 1$

no derivative at $x=3$

2.

$f(x) = f(-x)$

b

3.

$2^6 = x-6$

$x = 64+6$

4.

$$\lim_{x\to 0} x \times \frac{1}{\sin(x)} = \lim_{x\to 0}\left(\frac{x}{\sin(x)}\right) = \lim_{x\to 0} \frac{\frac{d}{dx}(x)}{\frac{d}{dx}(\sin(x))}$$

$$= \frac{1}{\cos(x)} = \frac{1}{1} = 1$$

5. $\frac{240}{180} \times \pi = \frac{4}{3}\pi$

6.

$\sin x = 1$ or $\sin x = 5$

$0 \le x \le 2\pi$

$x = \frac{\pi}{2}$

7.

$$\frac{d}{dx}\left(\frac{x-1}{x+1}\right)$$

$$= \frac{\frac{d}{dx}(x-1)\times(x+1) - (x-1)\times\frac{d}{dx}(x+1)}{(x+1)^2}$$

$$= \frac{2}{(x+1)^2}$$

8.

$$\csc(30^\circ) = \frac{1}{\sin(30^\circ)}$$

$$= 2$$

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9. $\frac{(2x-3)(x+5)}{x-7} = 0$

$x \neq 7$

$2x-3=0$ $\quad x=\frac{3}{2}$

$x+5=0$ $\quad x=-5$

$A: x=\frac{3}{2}$ or -5, $x \neq 7$

10.

$\int \tan(x)^2 dx = \int \sec(x)^2 - 1 \, dx$

$= \int \sec(x)^2 dx - \int 1 dx$

$= \tan(x) - \int 1 dx$

$= \tan(x) - x$

$\tan(x) - x \Big|_0^{\frac{\pi}{4}} = \tan\left(\frac{\pi}{4}\right) - \frac{\pi}{4} - \tan(0)$

$= 1 - \frac{\pi}{4}$

11. $\overline{PR} = 3 \quad \overline{RQ} = 4$

$\angle R = 90^\circ$

3:4:5

A: 5 #

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12. $3x^2-4x-1=0$

$a=3 \quad b=-4 \quad c=-1$

$\frac{-b\pm\sqrt{b^2-4ac}}{2a} = \frac{4\pm\sqrt{28}}{6} = \frac{4\pm2\sqrt{7}}{6} = \frac{2\pm\sqrt{7}}{3}$

13. $x^2+2y=0$

14. $f(x)=5x-2$

$f(x)+2=5x$

$x=\frac{f(x)+2}{5}$

$f^{-1}(x)=\frac{x+2}{5}$

15.

$m=\frac{\Delta y}{\Delta x}=\frac{4-(12)}{-5-3}$

$=-2$

16.

$\frac{5n+5+3}{2n+2+3} = \frac{5n+3}{2n+3}$

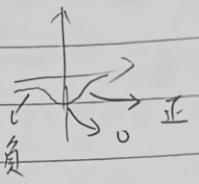
17.

$\frac{r}{9}=\frac{5}{8} \quad r=2$

$8r=5q \quad q=\frac{16}{5}$

$q=\frac{8}{5}r$

18、共



19. $8-2+7=13$

$13\times3=39$

20.

$2x\int\frac{x}{\sqrt{1-x^2}}dx$

$t=\sqrt{1-x^2}$

$dt=$

21.

$\frac{3}{4+x^2}\times\left(-\frac{2x}{4+x^2}\right)$

$=\frac{-6x}{(4+x^2)^2}$

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22.

$-x+4y=-50$

$x+y=20$

$x=4y+50$

$5y+50=20$

$y=-6$

23.

$x^3x2+2x^2x2+2x^2x2=10x^2$

24.

$xy(x^3-y^3)$

$=xy(x-y)(x^2+xy+y^2)$

25. $y=ax+b$ $y=\frac{1}{2}x+\frac{11}{2}$

$5a+b=3$

$-a+b=6$

$6a=-3$

$a=-\frac{1}{2}$

$b=\frac{11}{2}$

26.

$1<x<3$

27.

$(2x+6)xx=260$

$x=10$

$(10+26)x2=72$

28.

$x\geq 0, 0\leq x\leq 12$

$x\leq 0, -4\leq x\leq 0$

$-4\leq x\leq 12$

29.

$\tan x\cos x=\frac{\sin x}{\cos x}x\cos x$

$=\sin x$

30.

$f(x)=8x^8$ at $x=\frac{1}{2}$

$f'(\frac{1}{2})\ 64(\frac{1}{2})^7=\frac{1}{2}$

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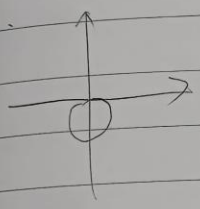
31.

$f(a+b) = 2^{a+b}$

$= 2^a \times 2^b$

$= f(a) \times f(b)$

32.



33.

$\tan\theta = \frac{\sqrt{x^2-1}}{1} = \sqrt{x^2-1}$

34.

$\log_2(2x) + \log_2(y^{-2}) + \log_2(z)$

$= \log_2(2xy^{-2}z) = \log_2\left(\frac{2xz}{y^2}\right)$

35.