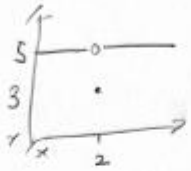
2022/3/00 생물 1.5

1. 참



2.
(a) $f(x)$는 3에서 양측극한이 발산한다.

(b) $f(x)$는 4의 우극한에서 $\frac{0}{0}$의 우극한대로 발산한다

3.
(a) 2 (b) 1
(c) 4 (d) 좌극한 ≠ 우극한
(e) 3

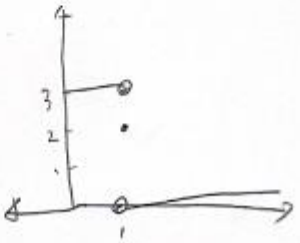
4.
(a) 4 (b) 5 (c) 2
(d) 4

5.
(a) -4 (b) 4 (c) 4
(d) -4 (e) 4 (f) $x=1$

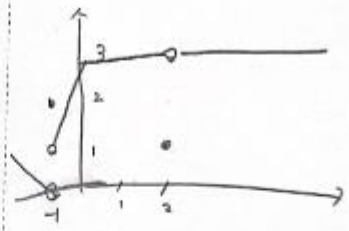
6.
$a=0$

7.
(a) $-\infty$ (b) ∞
(c) × 좌극한 ≠ 우극한

8.



9.



10
$\lim_{x\to 3} \frac{(x-3)x}{(x-3)(x+3)} = \frac{1}{2}$

11
$\frac{cc}{c(c+1)} = 1$

12. $\frac{3}{2}$

13. 1

14.

양의 무한대

15

양의 무한대

16

음의 무한대

17.

$\frac{1}{x \cdot \cos x}$ 양의 무한대

18

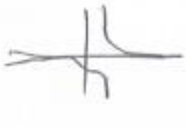
$\frac{x(x+2)}{(x-1)^2}$ 양의 무한대

19

$x = -2$

20

$\lim \frac{1}{(x-1)(x^2+x+1)}$ 1의 우극한



21

$1 - \frac{1}{500}$, $\frac{16}{25}$ ... (0)

20223100 상훈 16

1.

a. -6 b. -8

c. 2 (d) -6

(e) $x \neq 0$ (f) 0

2.

$\lim_{x \to 5} x^2 - \lim_{x \to 5} 5x = 75$

3. $8 \times 11 = 88$

4. 5

5. $\frac{-3}{9}$ -3^{-3}

6. -13 7. 6

8. x. 9. $\frac{(x-3)(x+2)}{(3x-1)(x+2)}$

10 $\frac{(t^2-3)(t^2+3t+1)}{(t-3)(t+3)}$ (k) $\frac{1}{6}$ 11. $\frac{5}{7}$ (−6)

12.

$\frac{t}{h(\sqrt{9+h}+3)}$ $\frac{1}{6}$

13.

$\left(\frac{3-x}{3x} \times \frac{1}{x-3}\right)$ $-\frac{1}{9}$

14.

$\frac{2}{\sqrt{1+t}+\sqrt{1-t}}$ 1

15

$\frac{(6-x)}{(6-x)x} \times \frac{1}{6\sqrt{x}}$ $\frac{1}{128}$

16

$\frac{1-\sqrt{1+t}}{t(\sqrt{1+t})}$ $\frac{-t}{t(\sqrt{1+t})(1+\sqrt{1+t})}$

$-\frac{1}{2}$

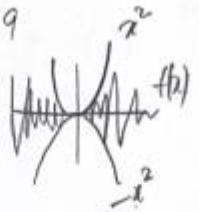
17

$\frac{3x^2h+3xh^2+h^3}{h}$ $3x^2$

18

$\frac{1}{3} \times (\sqrt{1+3x}+1)$ $\frac{2}{3}$

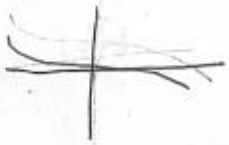
19



20

$\eta \leq \lim_{x \to 0} f(x) \leq \eta$ η

21



22.

8

23

$\frac{2x-1}{x^2 \times (2x-1)}$ 일반적으로 같지는 않다

24

$\left(\frac{|x|-x}{x|x|}\right)$ $-\frac{2x}{x^2}$ 우극한과 좌극한이 다르다

25

(i) 1 (ii) -1

(iii) x (iv) 1

26.

$g(x) = \dfrac{f(x+3)(x-2)}{|x-2|}$

(a)

(i) 5 (ii) -5

(b) x

(c)

27.

c=7

28

(i) -2 (ii) -2

(iii) -2

(b)

(i) n-1 (ii) n+1

(c) $a \neq n$ (n은 정수)

29 $\lim_{x \to n} [[-x]]$ 에서 극한값이 존재하지 않는다.

30

31. 8

32

33

$\lim_{x \to a+} f(x) = 1$ $\lim_{x \to a-} f(x) = 0$

$\lim_{x \to a+} g(x) = 0$ $\lim_{x \to a-} g(x) = 1$

34

$12 - a$ $a = 15$

$$\lim \frac{3x^3+1 \quad 5x+18}{x^2+x-2} = \frac{(x+2)(3x+9)}{(x+2)(x-1)}$$

$\frac{3}{-3} = -1$

(-1)

13.

(1)

$\lim_{x \to 3} \frac{1}{x+3}$

$f(3) = \frac{1}{6}$

14

$x =$ 모든 실수

15

$\frac{\cos(t^2)}{(t+1)(1-t)}$

16

$2\pi x$

17 "

19.

8

19

$\frac{\pi^2}{16} \times 1 = \frac{\pi^2}{16}$

20 $\sin x = 1$ $x = \frac{\pi}{2} + 2n\pi$

21 $f(1) = \lim_{x \to 1+}$ f(x)

22

f(x) x=1에서 연속

23

x

24

$4c+4 = 8-2c$ $\frac{2}{3}$

25

$3a + 6a = 36$ ④

26

$g(x) = f(x+1)(x-1)$ 4 ㅇ

$h(x) = x f(x+1)$ 6

$f(x) = \sin x$

27

$c^2 + 10sc = 1000$

x^2의 양의 계수가 1인 $\sin x$ 속력

13.

(1)

$\lim_{x \to 3} \frac{1}{x+3}$

$f(3) = \frac{1}{6}$

14

$x =$ 모든 실수

15

$\frac{\cos(t^2)}{(t+1)(1-t)}$

16

$2\pi x$

17 "

19.

8

19

$\frac{\pi^2}{16} \times 1 = \frac{\pi^2}{16}$

20 $\sin x = 1$ $x = \frac{\pi}{2} + 2n\pi$

21 $f(1) = \lim_{x \to 1+}$ f(x)

22

f(x) x=1에서 연속

23

x

24

$4c+4 = 8-2c$ $\frac{2}{3}$

25

$3a + 6a = 36$ ④

26

$g(x) = f(x+1)(x-1)$ 4 ㅇ

$h(x) = x f(x+1)$ 6

$f(x) = \sin x$

27

$c^2 + 10sc = 1000$

x^2의 양의 계수가 1인 $\sin x$ 속력

28

$1-4+1=-2$

$-2 < f(x) < 0$

$-1 < x < 0$

29

$f(x) = \cos x - x = 0$

$x=0 \quad f(x)=1$

$x=1 \quad f(1)=-1$

$1 < f(x) < -1$

30.

?

31.

$a<x<b \qquad f(a)<f(x)<f(b)$

$f(a)f(b)<0$

$a=0 \quad b=2$

$-4 < f(x) < 24$

32

sin

?

33

$\lim_{h\to 0-} f(a+h) = \lim_{x\to a+} f(x)$

$\lim_{h\to 0+} f(a+h) = \lim_{x\to a+} f(x)$

$= f(a)$

34

cosx

$\lim_{x\to\pi+} \cos x = \lim_{x\to\pi-} \cos x = \cos\pi$

(사잇값)

그래프그리기

35

그림 8..?

36

$f(x) = \frac{x}{x}$

37

$\lim_{x\to 0} f(x)\, x^2 \sin\left(\frac{1}{x}\right) = \lim_{x\to 0} x^3$

$= 0$

38

$f(7)=0 \qquad f(19)=a$

$g(7)=a \qquad g(19)=0$

$f(7) \le g(19) \le f(19)$

20223100 4월 3일 2.4

1. $3\cos x + 2\sin x$

2. $\frac{dy}{dx} = 2x - \csc^2 x$

3. $2\theta\sin\theta + \theta^2\cos\theta$

4. $\sec x \tan^2 x + \sec^3 x$

5. $\sin + \sin^2 + \theta\cos\theta - \cos^2\theta$

6. $2\sin t\cos t$

7. $\frac{\sin - \sec}{\sin^2}$ $\frac{1}{5}$ - cotan

8. $\frac{2-\tan x + x\sec^2 x}{(2-\tan x)^2}$ $-\csc\theta\cot\theta$ $-\csc^2\theta$

9. $\frac{-2\sec^2\tan x}{(1-\sec w)^2}$

10. $\frac{(\sin t + \tan t)(1+t) + t\sin t}{(1+t)^2}$

11. $\cos\theta\sin\theta - \theta\sin^2\theta + \theta\cos^2\theta$

12
$\left(\frac{1}{\sin x}\right)' = -\frac{\cos x}{\sin^2 x}$

13
$\left(\frac{\cos x}{\sin x}\right)' = -\frac{\cos^2 x}{\sin^2 x} - \frac{\sin x}{\sin x}$

$= -\cot^2 x - 1$

$= -\csc^2 x$

14
$\cos x - \sin x$

$y = x + 1$

15
$1 + \sec^2 x$

$y = 2(x-\pi) + \pi$

$y = 2x - \pi$

16
$(2 + 2x\cos x)$

$y = 2(x - \frac{\pi}{2}) + \pi$

$2 + \pi$

17
$\tan\sec x \tan x - 1$

18

$$g(\theta) = \frac{\theta\cos\theta - \sin\theta}{\theta^2}$$

$$g'(\theta) = \left(\frac{\cos\theta}{\theta} - \frac{\sin\theta}{\theta^2}\right)'$$

$$= \frac{-\theta\sin\theta + \cos\theta}{\theta^2} - \frac{\theta^2\cos\theta - 2\theta\sin\theta}{\theta^4}$$

$$= -\frac{\sin\theta}{\theta} + \frac{\cos\theta}{\theta^2} - \frac{\cos\theta}{\theta^2} - \frac{2\sin\theta}{\theta^3}$$

$$= -\frac{\sin\theta}{\theta} - \frac{2\sin\theta}{\theta^3}$$

19

$$\frac{\sec^2 x \times \sec x - (\tan x - 1)\sec x \tan x}{(\sec x)^2}$$

$$= \frac{\sec^3 x - \sec\tan^2 x + \sec x \tan x}{\sec^2 x}$$

$$= \sec x - \sin^2 \cos x + \sin x$$

20

$f'(a) = 0$ 이되는 a

$1 + 2\cos x = 0$ $\quad \cos x = -\frac{1}{2}$

~~$\frac{2}{3}\pi$~~ $\frac{4}{3}\pi$ $\frac{8}{3}\pi$ $\frac{10}{3}\pi$ $\frac{14}{3}\pi$ ...

$k\pi$

$\frac{2}{3}\pi$

$\frac{2}{3}\pi, \frac{4}{3}\pi, \ldots$

21

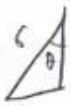
x : $8\cos t$

y : $-8\sin t$

(b)

$4\sqrt{3}$, 4, $-4\sqrt{3}$

22



t

$\lim_{h\to 0} \frac{f(h+\frac{\pi}{3}) - f(h)}{h} =$

23

$\frac{5}{3}$

24

3

25

$$\frac{5(1-\cos x)}{x^2} = \frac{5}{x} \times \frac{1-\cos x}{x} = 1$$

26

2

27

$-\frac{3}{4}$

$\frac{\sin 3x}{3x} \times \frac{3x}{5x^3+4x}$

28

$\frac{\sin\theta}{\theta} \times \frac{\theta}{\theta+\tan\theta} = 1 \times \frac{1}{1+\frac{\tan\theta}{\theta}} = \frac{1}{2}$

29

$-\frac{1}{2}$

30

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

$= -\sqrt{2}$

31

$\sin x \Rightarrow \cos x \rightarrow -\sin x$

$-\cos x \rightarrow \sin x$

4번 DLC 반복 $\sin x$

32

$y'' = -A\sin x - B\cos x$ $\quad A=3B$

$y' = A\cos x - B\sin x$ $\quad -3A-B=1$

$-3A\sin x \quad -3B$

$(-3A-B)\sin x + (A-3B)$

$A = -\frac{3}{10}$

$B = -\frac{1}{10}$

33

(a)

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

(b)

$\sec x \tan x = \frac{+\sin x}{\cos^2 x}$

(c)

$\cos x - \sin x = \frac{-\csc^2 + \csc + \csc\cot^2 x}{(\csc)^2}$

C34

$d = 2\theta \times \sin\left(\frac{\theta}{2}\right)$

$S = 2\theta$

$\lim \frac{\theta}{2\sin\frac{\theta}{2}} = 1$

2022 3600 숙제 2.5

1.

$y = 3x(-4x^3)(5-x^4)^2$

2. $-\sin x \times \cos(\cos x)$

3. $\frac{1}{2} \times \cos x \times (\sin x)^{-\frac{1}{2}}$

4.

$4(6x^2-10x)(2x^3-5x^2+4)^4$

5.

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

6.

$\frac{-2 \times 2(2t+1)}{(2t+1)^4}$

7.

$\frac{-2 \times (-\sin t + \sec^2 x)(\cos t + \tan x)}{(\cos t + \tan x)^4}$

8.

$2\theta \times (-\sin\theta^2)$

9.

$\sqrt[3]{1+v^2} + v \times \frac{1}{2} \times 2v \times (1+v^2)^{-\frac{2}{3}}$

10

$3x4(4x+5)^2(x^2-2x+5)^4$

$+ 4 \times (2x-2)(4x+5)^3(x^2-2x+5)^3$

11

$\frac{2}{3} \times (t+1)^{-\frac{1}{3}} \times (2t^2-1)^3$

$+ (t+1)^{\frac{2}{3}} \times 3 \times 4t(2t^2-1)$

12

$\frac{1}{2} \times \frac{(x+1)-x}{(x+1)^2} \times \left(\frac{x}{x+1}\right)^{-\frac{1}{2}}$

13

$8 \times \frac{3x^2(x^3+1) - 3x^2(x^3-1)}{(x^3+1)^2} \times \left(\frac{x^3-1}{x^3+1}\right)^7$

14

$\frac{3x2(t^2-1)^2 \times (2t+1)^5}{(2t+1)^{10}} - 10(t^2-1)^3(2t+1)^4$

15

$-4 \times \sec 4x \tan x \times \sin(\sec 4x)$

16

$\sqrt{\frac{x^2}{1+5}} = \sqrt{1+5} = \frac{1}{2} \times \cos x \times (1+5)^{\frac{1}{2}}$

17

$\frac{2\sin 2x\,(1+\cos 2x)+2\sin 2x\,(1-\cos 2x)}{(1+\cos 2x)^2} \times 4 \times \left(\frac{1-\cos 2x}{1+\cos 2x}\right)^3$

18

$\cos x \times \cos(1-x^2)$

$+\sin x \times 2x \times \sin(1-x^2)$

19

$\frac{1}{2} \times 2t \times (1+t^2)^{-\frac{1}{2}} \times \sec^2\sqrt{1+t^2}$

20

$2x \times 2x\sin(x^2+1)\cos(x^2+1)$

21

$-3\sin^2\cos x \times 4\cos^3\sin(\sin^3 x)$

22

$\sec^2(\sec(\cos t)) \times \sec(\cos t)$

$\tan(\cos t) \times -\sin t$

23

$2\theta^2 p\,[2\theta\sin\theta x+n]^{p-1}\cos\theta x$

24 ?

25

1계: $3 \times \cos 3\theta \times -\sin(\sin 3\theta)$

2계

$+9\sin 3\theta \times \sin(\sin 3\theta)$

$+9\cos^2 3\theta \times -\sin(\sin 3\theta)$

26

$\frac{1}{2} \times -\sin x \times (\cos)^{-\frac{1}{2}}$

$+\frac{1}{4} \times \sin^2 x \times (\cos)^{-\frac{3}{2}} - \frac{1}{2}\cos x^{\frac{1}{2}}$

27

$-6 \times 3 \times (3x-1)^{-7}$

$y = 18x+1$

28

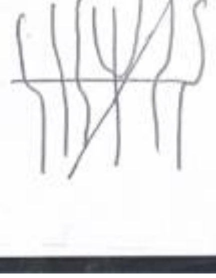
$\cos x \times \cos(\sin x)$

$y = -x+\pi$

29

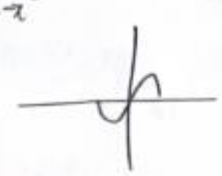
$\frac{\pi}{2}x \times \sec(\frac{\pi}{4}x^2)$

$\frac{\sqrt{2}}{2}\pi(x-1)+1$



30

$\sqrt{2-x^2} \to x^2\sqrt{2-x^2}^{-\frac{1}{2}}$



31

$g=3$ $g=-1$

32

$F'(x) = g'(x) \times f'(g(x))$

$6 \times 4 = 24$

33

$f'(x) \times g'(f(x))$ $4 \times 2 = 8$

$g'(x) \times f'(g(x))$ $6 \times 5 = 30$

34

$g'(x) \times f'(g(x))$ $-1 \times \frac{1}{3} = -\frac{1}{3}$

$f'(x) \times g'(f(x))$ $2 \times -1 = -2$

$g'(x) \times g'(g(x))$ $-1 \times \frac{1}{2}$

35

$\frac{1}{2} \times f'(x) \times f(x)^{-\frac{1}{2}}$

$-\frac{3}{2} \times \frac{1}{2} \times \frac{1}{\sqrt{2}} = -\frac{3\sqrt{2}}{8}$

36

$f($

$3f(4f(x)) = 1(x)$

$g'(x) \times f'(g(x))$

⇓

$\frac{4f'(x)}{8} \times \frac{3f'(4f(x))}{6} \times \frac{f'(3f(4f(x)))}{2}$

96

37

$g(h(x))' \times f'(g(h(x)))$

⇓

$h'(x) \times g'(h(x)) \times f'(g(h(x)))$

$4 \times 5 \times 6 = 120$

38

$\cos 2x \to -2\sin 2x \to -4\cos 2x$

$\to 8\sin 2x \to$

$2^n <$ $2^{103} \times \cos 2x$

39.

$\frac{1}{6} \times 10\pi \cos(10\pi t)$

40

$\frac{\pi}{20} \times \frac{10}{2\pi} \times \cos\left(\frac{10}{2\pi}\pi t\right)$

$\frac{\pi}{54} \times \cos\frac{10}{2\pi}\pi$

41

$s'(t) = v(t)$

$v'(t) = a(t)$

$\frac{dp}{dt}$ ⇒ 위치변화율(속도)

$\frac{ds}{dt}$ ⇒ 속도의 변화율(가속도)

42

우함수 $f(-x) = f(x)$

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

기함수

43 ?

44

$y = F(x) = f(g(h(x)))$

$z = g(y)$ $y = h(x)$

$\frac{dy}{dx} = \frac{dz}{dy} \times \left(\frac{dz}{dy} \times \frac{dy}{dx}\right)$

$F'(x) = \frac{dx}{dz} f(h'(x) \times g'(h(x))$

$h''(x) \times g'(h(x)) + h'(x) \times g''(h(x)) \times h'(x) \times g'(h(x))$

20223100 성조 2.6

2.

$\frac{1}{2}x^{-\frac{1}{2}} + \frac{dy}{dx}\frac{1}{2}xy^{\frac{1}{2}} = 0$

$-\frac{\sqrt{x}\sqrt{y}}{2x}$

8

$\frac{1}{12} \times \sec^2\left(\frac{\pi}{12}\right) = 1 + \frac{dy}{dx}$

$\frac{dy}{dx} = \frac{1}{12} \times \cos^2\left(\frac{\pi}{12}\right) - 1$

12

$4x^3y^2 + 2x^4y \times \frac{dy}{dx} - 3x^2y - x^3 \times \frac{dy}{dx}$

$+2y^3 + 6xy^2\frac{dy}{dx} = 0$

$\frac{4x^3y^2 - 3x^2y + 2y^3}{x^3 - 2x^4y - 6xy^2}$

14

$\frac{dy}{dx} = 4(x^2+y^2)(2x + \frac{dy}{dx}) = 25(x$

$\frac{2(25-3x-4)}{1\times(3(+4+25)}$ $\frac{-45}{45}$ $\frac{-8}{1}$

$y = -\frac{9}{13}(x-3)+1$

16

$\frac{2}{2x^{\frac{1}{3}}} + \frac{2\frac{1}{3}(\frac{y}{x})}{2y^{\frac{1}{3}}} = 0$

$\left(\frac{y}{x}\right)^{\frac{1}{3}}$

$-\frac{2}{3^{\frac{1}{3}}}(1+\sqrt{3})+1$

20223160 성훈 2.9

21

$y + \frac{dy}{dx} \times x + \frac{dy}{dx} \times 3y^2 = 0$

$\left(\frac{-y}{x+3y^2}\right)'$ $\frac{y}{x-3y^2}$

0,1 $-\frac{1}{3}$

23

없는것 14..?

31

$2xy^2 + 2x^2y \frac{dy}{dx} + y + x\frac{dy}{dx} = 0$

$-\left(\frac{2xy^2+y}{2x^2y+x}\right) = 1$

$2xy^2 - 2x^2y = x - y$ $y = x$

$2xy(y-x) = x-y$ $\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}$ $xy = \pm 5$

33

$y = m(x+5)$

$x^2 + m^2(x+5)^2 = 5$

$m = \frac{1}{4}$

②

1.

$x^3 - x^2 + 3 + (3x^2 - 2x)(x+2)$

$-9 + 16(x+2)$

2.

$x^{\frac{1}{3}} + \frac{1}{3}x^{-\frac{2}{3}}(x-8)$

$2 + \frac{1}{12}(x-8)$

10

$dy = \sec^2 x \, dx$

(b) 0.2

16

x^4 $a = 2$ 15.968

f(2) $16 + 32 \times 0.001$

18

$\pi = 180$ $x = \frac{\pi}{90}$

$0 + x$ $\tan\frac{\pi}{90}$

19

$1 + 0(x-0)$

0