(13) hpot :

$x^2+y^2-6x-2y+6=0$

$x^2+y^2-2x+2y-2=0$ −

$-4x-4y+8=0$

$x+y-2=0$

$y=2-x$ → tali busur.

$x^2+(2-x)^2-2x+2(2-x)-2=0$

$x^2+4-4x+x^2-2x+4-2x-2=0$

$2x^2-8x+6=0$

$x^2-4x+3=0$

$(x-1)(x-3)=0$

$x=1 \quad x=3$

$y=2-1 \quad y=2-3$

$=1 \quad =-1$

$(1,1) \quad (3,-1)$

→ $x^2-2x+0=0$

$x^2=2x+0$

(14) $(x^3+7x^2+4):(x^2-2x) \rightarrow S=\cdots$

(15) $f(x)=$

$f(x)$

$f(x)$

$f(x)$

$f(a$

$f(-3$

-27

-36

$f(x$

-1

2

(15) $f(x) = x^3 - 3x^2 + kx - 6$

$f(x) : (x+3) \rightarrow S(x) = 0$

$f(x) : (x^2 + x - 2) \rightarrow S(x) = \cdots$

$f(x) : (x-a)$

$f(a) = S$

$f(-3) = 0$

$-27 - 27 - 3k - 6 = 0$

$-3k = 60$

$k = -20$

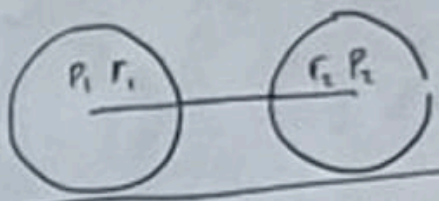
$f(x) = x^3 - 3x^2 - 20x - 6.$

	1	-3	-20	-6
-1	x	-1	$4.$	x

⑫ Jarak terdekat :

$x^2+y^2-4x+12y+31=0 \rightarrow P(2,-6), r=\sqrt{4+36-31}=3$

$x^2+y^2-14x-12y+81=0 \rightarrow P(7,6), r=\sqrt{49+36-81}=2$



Jarak terdekat : $P_1P_2 - (r_1+r_2)$

// terjauh : $P_1P_2 + (r_1+r_2)$

$P_1P_2 = \sqrt{(7-2)^2+(6-(-6))^2} = \sqrt{25+144} = 13$

J terdekat : $13-(3+2) = 8$

$x^2+y^2+Ax+By+C=0$

$P\left(-\frac{A}{2}, -\frac{B}{2}\right)$

$r = \sqrt{\left(-\frac{A}{2}\right)^2+\left(-\frac{B}{2}\right)^2-C}$

Jarak (x_1, y_1) & (x_2, y_2)

$= \sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

(12)

$\sin^2 x + \cos^2 x = 1$: $\sin^2 x$: $\cos^2 x$

$1 + \cot^2 x = \operatorname{cosec}^2 x$

$\tan^2 x + 1 = \sec^2 x$

$\sin(a \pm b) = \sin a \cos b \pm \cos a \sin b$

$\cos(a \pm b) = \cos a \cos b \mp \sin a \sin b$

$\tan(a \pm b) = \dfrac{\tan a \pm \tan b}{1 \mp \tan a \tan b}$

(10) $\sin 75 = \sin(45 + 30)$

$= \sin 45 \cos 30 + \cos 45 \sin 30$

$= \frac{1}{2}\sqrt{2} \cdot \frac{1}{2}\sqrt{3} + \frac{1}{2}\sqrt{2} \cdot \frac{1}{2}$

$= \frac{1}{4}\sqrt{6} + \frac{1}{4}\sqrt{2}$

$= \frac{1}{4}(\sqrt{6} + \sqrt{2})$

$\sin 2A = 2 \sin A \cos A$

$\cos 2A = 2\cos^2 A - 1$

$= \cos^2 A$

(8) $2\cos 2x + 1 = 0, [0, 360]$

$\cos 2x = -\frac{1}{2}$

$\cos 2x = \cos 120$

- $2x = 120 \pm k \cdot 360$
  $x = 60 \pm k \cdot 180$
  $x = 60, 240$
- $2x = -120 \pm k \cdot 360$
  $x = -60 \pm k \cdot 180$
  $x = 120, 300$

$HP = \{x \mid 60, 120, 240, 300\}$

$\sin x = \sin \alpha$
- $x = \alpha \pm k \cdot 360$
- $x = (180 - \alpha) \pm k \cdot 360$

$\cos x = \cos \alpha$
- $x = \alpha \pm k \cdot 360$
- $x = -\alpha \pm k \cdot 360$

$\tan x = \tan \alpha$
- $x = \alpha \pm k \cdot 180$

$\sin^2 x + \cos^2 x = 1$

$1 + \cot^2 x = \csc^2$

$\tan^2 x + 1 = \sec^2$

$\sin(a \pm b) = \sin$

$\cos(a \pm b) = \cos$

$\tan(a \pm b) =$

(10) $\sin 75 = \sin(4$

$= \sin 45$

$= \frac{1}{2}\sqrt{2}$

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

$= \frac{1}{4}(\sqrt{}$

$\sin$

$\cos$

$\cos x = 0, [0, 360]$

④ $\dfrac{\log 3\sqrt{2} + \log 2\sqrt{3} + \log 6}{\log 30 - \log 5}$

$= \dfrac{\log(3\sqrt{2} \cdot 2\sqrt{3} \cdot 6)}{\log\left(\frac{30}{5}\right)}$

$= \dfrac{\log 36\sqrt{6}}{\log 6}$

$= {}^{6}\log\, 6^2 6^{\frac{1}{2}}$

$= {}^{6}\log\, 6^{\frac{5}{2}}$

$= \frac{5}{2} \cancel{{}^{6}\log 6}^{1}$

$= \frac{5}{2}$

⑤ $\bar{a} = (-2, 3, -4)$

$\bar{b} = (-1, 0, 5)$

$\bar{a}\cdot\bar{b} = 2 + 0 - 20$

⑥ $\bar{a} = \begin{pmatrix} 2 \\ -1 \\ 8 \end{pmatrix}$

proje

$|b| = \sqrt{}$

$= \sqrt{}$

$\bar{c} =$

$=$

$=$

Sifat log

basis → a, numerus → b dan c

① $^a\log bc = {}^a\log b + {}^a\log c$

② $^a\log \frac{b}{c} = {}^a\log b - {}^a\log c$

③ $^a\log b^n = n \cdot {}^a\log b$

④ $^{a^m}\log b^n = \frac{n}{m} {}^a\log b$

⑤ $^a\log b = \frac{1}{{}^b\log a}$

⑥ $a^{{}^a\log b} = b$

⑦ $^a\log b \cdot {}^b\log c = {}^a\log c$

⑧ $^a\log b = \frac{{}^c\log b}{{}^c\log a}$, c bisa angka apa saja

(3) $\log_7 3 = x$, $\log_7 5 = y$

$$\log_3 15 = \log_3 3.5$$

$$= \log_3 3 + \log_3$$

$$= 1 + \frac{y}{x}$$

$$= \frac{x+y}{x}$$

$$\log_7 5 = \frac{\log_2 5}{\log_2 3} = \frac{y}{x}$$

(1) $\dfrac{4p^2q^{-2}r}{9p^{-4}q^3r^3}$

$= \dfrac{4}{9}p^6q^{-5}r^{-2}$

$= \dfrac{4p^6}{9q^5r^2}$

(3)

(2) $3^x - \dfrac{45}{3^x} - 4 = 0 \quad , 3^x = p$

$\left(p - \dfrac{45}{p} - 4 = 0\right) \times p$

$p^2 - 45 - 4p = 0$

$p^2 - 4p - 45 = 0$

$(p-9)(p+5) = 0$

turun ...

(25) PGS $y = 2\cos x + 1$ di $x = \frac{\pi}{6}$

$y' = m$

$-2\sin x = m$

$x = 30 \rightarrow -2\sin 30 = m$

$-2 \cdot \frac{1}{2} = m$

$-1 = m$

$x = 30 \rightarrow y = 2\cos(30) + 1$

$= 2 \cdot \frac{1}{2}\sqrt{3} + 1$

$= \sqrt{3} + 1$

$y - y_1 = m(x - x_1)$

$y - (\sqrt{3}+1) = -1\left(x - \frac{\pi}{6}\right)$

$y = -x + \frac{\pi}{6} + \sqrt{3} + 1$

(26) X : jml 2 mt dd

$P(4 \le X \le 8) = \frac{23}{36}$

mt dd	2	3	4	5	6	7	8	9	10	11	12
jml kjg	1	2	3	4	5	6	5	4	3	2	1

(27) $\frac{4k}{2^4} > 3$

X : jml kuning

$6\ 5\ 4\ 3!$

$\frac{}{3\ 2}$

x − 60), [0,180], turun ···

2 < 0

. 2 = 0

) = 0

.0) = sin 0

60 = 0 ± k.360

2x = 60 ± k.360

x = 30 ± k.180

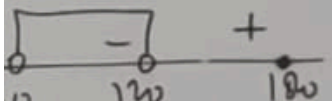
x = 30

− 60 = (180 − 0) ± k.360

2x = 240 ± k.360

x = 120 ± k.180

x = 120



− sin (2.60 − 60) . 2 < 0

+

120°

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

(25) P65 $y = 2\cos x + 1$ di $x = \frac{\pi}{6}$

$y' = m$

$-2\sin x = m$

$x = 30 \rightarrow -2\sin 30 = m$

$-2 \cdot \frac{1}{2} = m$

$-1 = m$

$x = 30 \rightarrow y = 2\cos(30) + 1$

$= 2 \cdot \frac{1}{2}\sqrt{3} + 1$

$= \sqrt{3} + 1$

$y - y_1 = m(x - x_1)$

$y - (\sqrt{3} + 1) = -1\left(x - \frac{\pi}{6}\right)$

$y = -x + \frac{\pi}{6} + \sqrt{3} + 1$

(26) X : jml 2 mt dd

$P(4 \le X \le 8) = \frac{23}{36}$

mt dd	2	3	4	5	6	7	8	9	10	11	12
jml kg	1	2	3	4	5	6	5	4	3	2	1

(27) 4k, 2 4 > 3

X : jml kuning

$P(X \ge 2) = P(2k, 1\,4) + P(3k)$

C^4 C^2 C^4

6 5 4 3!

4 3 2

2 1

3.

$2 \sin A \cos A = \sin 2A$

(24) $f(x) = \cos(2x - 60)$, $[0, 180]$, turun ...

$f'(x) < 0$

$-\sin(2x-60) \cdot 2 < 0$

$-\sin(2x-60) \cdot 2 = 0$

$\sin(2x-60) = 0$

$\sin(2x-60) = \sin 0$

- $2x - 60 = 0 \pm k \cdot 360$

  $2x = 60 \pm k \cdot 360$

  $x = 30 \pm k \cdot 180$

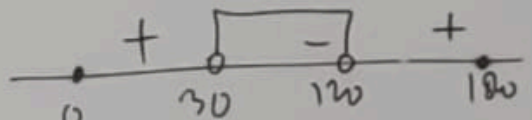
  $x = 30$

- $2x - 60 = (180 - 0) \pm k \cdot 360$

  $2x = 240 \pm k \cdot 360$

  $x = 120 \pm k \cdot 180$

  $x = 120$



$x = 60 \rightarrow -\sin(2 \cdot 60 - 60) \cdot 2 < 0$

$+$

$30 < x < 120$

$\frac{1}{6}\pi < x < \frac{2}{3}\pi$

(25) P

y

-2

$x = 30 \rightarrow -2$

-2

y

y

(26)

mt

Jml

(27)

], naik ...

(30a) $C_3^5 \left(\frac{3}{4}\right)^3 \left(\frac{1}{4}\right)^2$

$= \frac{5}{10} \cdot \frac{27}{64} \cdot \frac{1}{16_8}$

$= \frac{135}{512}$

$C_r^n \, p^r (1-p)^{n-r}$

Peluang binom

0

0

60

360

180

(22) $f(x) = 5\sin^2(3x-5)$

$f'(x) = \underbrace{10\sin(3x-5)}_{P} \cdot \underbrace{\cos(3x-5)}_{T} \cdot \underbrace{3}_{S}$

$2\sin A\cos A = \sin 2A$

$= 3.5.\underbrace{2\sin(3x-5)\cos(3x-5)}$

$= 15\sin 2(3x-5)$

$= 15\sin(6x-10)$

(23) $f(x) = \sin\left(2x-\frac{\pi}{3}\right)$, $[0,\pi]$, naik ...

$f'(x) > 0$

$\cos\left(2x-\frac{\pi}{3}\right)\cdot 2 > 0$

$\cos(2x-60) > 0$

$\cos(2x-60) = \cos 90$

- $2x-60 = 90 \pm k\cdot 360$

$2x = 150 \pm k\cdot 360$

$x = 75 \pm k\cdot 180$

$x = 75$

- $2x-60 = -90 \pm k\cdot 360$

$2x = -30 \pm k\cdot 360$

$x = -15 \pm k\cdot 180$

$f'\left(\frac{\pi}{4}\right)$

$f(45) = 0$

$V(45) = \sqrt{2}$

(30) $C_3^5\left(\frac{3}{4}\right)^3\left(\frac{1}{4}\right)$

$= \frac{5}{10}\cdot\frac{27}{64}\cdot\frac{1}{\cancel{16}_8}$

$= \frac{135}{512}$

$C_r^n P^r (1-P)^{n-r}$

Peluang binom

(19) $\lim_{x\to 0} \frac{-x^2}{1-\cos x}$

$= \lim_{x\to 0} \frac{-x \cdot x}{2 \sin x \sin x}$

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

(20) $\lim_{x\to\infty} \frac{1}{2} x \sin \frac{1}{5x}$

$\boxed{y = \frac{1}{x}}$ $\frac{1}{x} \to \frac{1}{\infty} \Rightarrow \boxed{y \to 0}$

$= \lim_{y\to 0} \frac{1}{2y} \sin \frac{1}{5} y$

$= \lim_{y\to 0} \frac{\sin \frac{1}{5} y}{2y}$

$= \frac{\frac{1}{5}}{2} = \frac{1}{5} \cdot \frac{1}{2} = \frac{1}{10}$ //

(21) $f(x) = \frac{\sin x - \cos x}{\sin x + \cos x}$, $f'\left(\frac{\pi}{4}\right)$

$\frac{\cdot x \tan x}{\sin x \sin x}$

$u' = \cos x + \sin x$ $u(45) = 0$

$v' = \cos$ $v(45)$

(22) $f(x) = 5 \sin$

$f'(x) = 10 \sin$

$= 3.5 \cdot 2$

$= 15$

$= 15$

(23) $f(x) = \sin$

$f'(x) > 0$

$\cos\left(2x - \frac{\pi}{3}\right.$

$\cos(2x -$

$\cos(2x$

$\cdot 2x$

(16) $\lim_{x\to 0} \frac{3x \sin 2x}{\sin x \tan 3x}$

$= \frac{3}{1} \cdot \frac{2}{3}$

$= 2$

(17) $\lim_{x\to 0} \frac{\sin 2x}{3 - \sqrt{2x+9}}$

$= \lim_{x\to 0} \frac{2\cos 2x}{-\frac{2}{\sqrt{2x+9}}}$

$= \lim (-2\cos 2x \cdot \sqrt{2x+9})$

$= -2 \cdot 1 \cdot 3$

$= -6$

(18) $\lim_{x\to 0} \frac{x \sin x + \tan^2 x}{1 - \cos x}$

$= \lim_{x\to 0} \frac{x \sin x + \tan^2 x}{2 \sin^2 x}$

$= \lim_{x\to 0} \frac{x \sin x}{2 \sin x \sin x} + \lim_{x\to 0} \frac{\tan x \tan x}{2 \sin x \sin x}$

(19) $\lim_{x\to 0} \frac{-x}{1 -}$

$= \lim_{x\to 0}$

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

(20) $\lim_{x\to \infty} \frac{1}{2}$

$y = \frac{1}{x}$

$= \lim_{y\to 0}$

$= \lim_{y\to 0}$

$= \frac{1}{5} = \frac{}{2}$

(21) f

Fungsi	Turunan
$\sin(x)$	$\cos(x)$
$\cos(x)$	$-\sin(x)$
$\tan(x)$	$\sec^2(x)$
$\cot(x)$	$-\csc^2(x)$
$\sec(x)$	$\sec(x)\tan(x)$
$\csc(x)$	$-\csc(x)\cot(x)$
$\arcsin(x)$	$\frac{1}{\sqrt{1-x^2}}$
$\arccos(x)$	$-\frac{1}{\sqrt{1-x^2}}$
$\arctan(x)$	$\frac{1}{x^2+1}$