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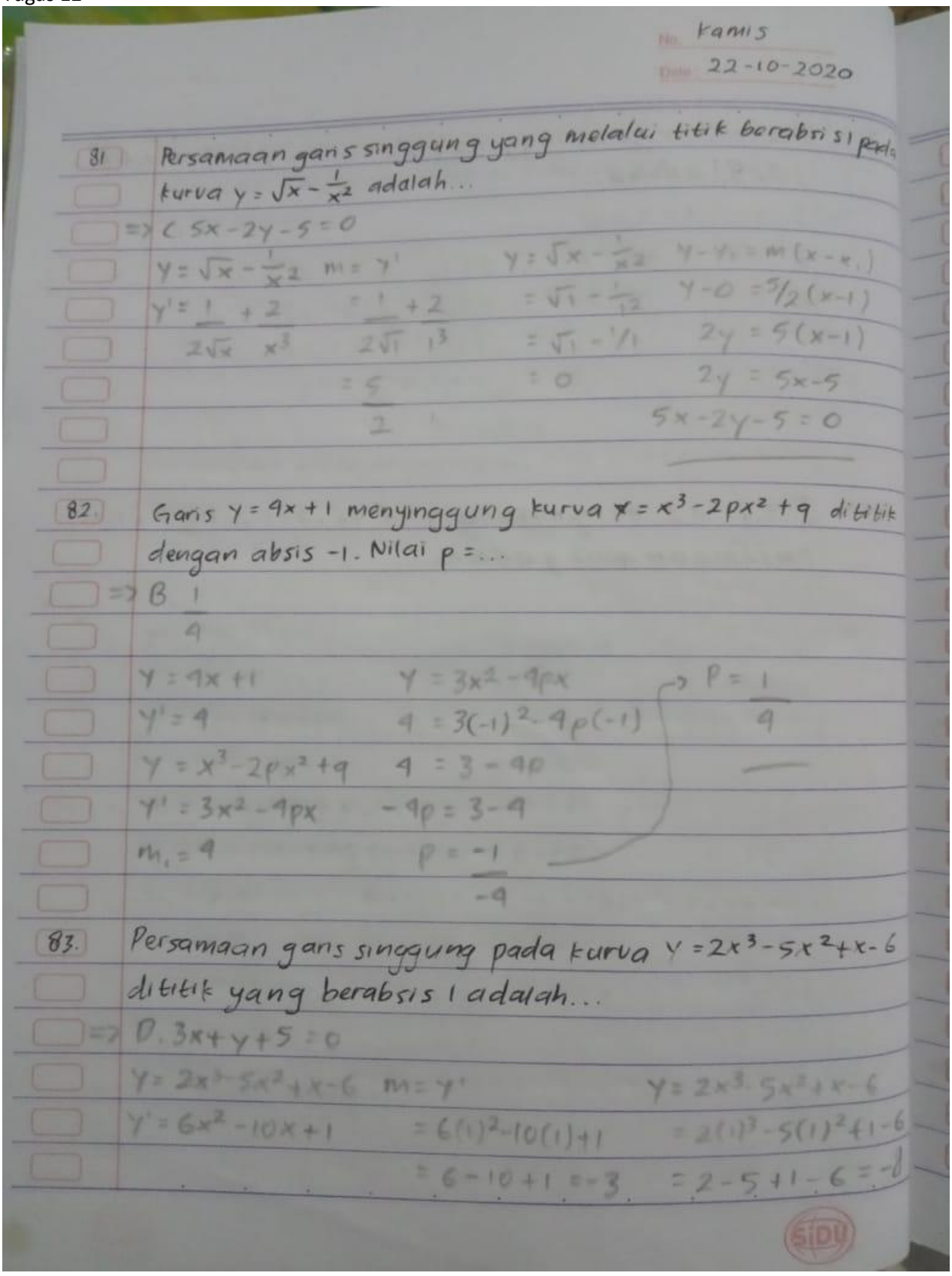
Kelas : XII RPL 2

Tugas 12



Kamis

22-10-2020

81. Persamaan garis singgung yang melalui titik berabsis 1 pada kurva $y = \sqrt{x} - \frac{1}{x^2}$ adalah..

=> C $5x - 2y - 5 = 0$

$y = \sqrt{x} - \frac{1}{x^2}$ $m = y'$

$y' = \frac{1}{2\sqrt{x}} + \frac{2}{x^3}$

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

$= \frac{5}{2}$

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

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

$= \sqrt{1} - 1/1$

$= 0$

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

$y - 0 = 5/2(x-1)$

$2y = 5(x-1)$

$2y = 5x - 5$

$5x - 2y - 5 = 0$

82. Garis $y = 9x + 1$ menyinggung kurva $y = x^3 - 2px^2 + 9$ di titik dengan absis -1. Nilai p =...

=> B $\frac{1}{9}$

$y = 9x + 1$

$y' = 9$

$y = x^3 - 2px^2 + 9$

$y' = 3x^2 - 4px$

$m_1 = 9$

$y = 3x^2 - 9px$

$9 = 3(-1)^2 - 9p(-1)$

$9 = 3 - 9p$

$-9p = 3 - 9$

$p = \frac{-1}{-9}$

$\rightarrow p = \frac{1}{9}$

83. Persamaan gans singgung pada kurva $y = 2x^3 - 5x^2 + x - 6$ di titik yang berabsis 1 adalah...

=> D. $3x + y + 5 = 0$

$y = 2x^3 - 5x^2 + x - 6$ $m = y'$

$y' = 6x^2 - 10x + 1$

$= 6(1)^2 - 10(1) + 1$

$= 6 - 10 + 1 = -3$

$y = 2x^3 - 5x^2 + x - 6$

$= 2(1)^3 - 5(1)^2 + 1 - 6$

$= 2 - 5 + 1 - 6 = -8$

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

$y + 8 = -3(x - 1)$

$y + 8 = -3x + 3$

$3x + y + 5 = 0$

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84. Persamaan garis singgung pada kurva $y = \sqrt{x} - x$ yang melalui titik $(9, -2)$ adalah...

=> C. $3x + 9y + 9 = 0$

$y = \sqrt{x} - x \quad m = y'$

$y' = \frac{1}{2\sqrt{x}} - 1 \quad = \frac{1}{2\sqrt{9}} - 1$

$= \frac{1}{6} - 1$

$= -\frac{3}{9}$

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

$y + 2 = -\frac{3}{9}(x - 9)$

$y + 2 = -\frac{3}{9}x + 3$

$y = -\frac{3}{9}x + 1 \Rightarrow 3x + 9y + 9 = 0$

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85. Persamaan garis singgung pada kurva $y = x^2 - 2x + 3$ yang tegak lurus garis $y = -\frac{1}{2}x - 1$ adalah...

=> D. $y - 2x + 1 = 0$

$y = x^2 - 2x + 3 \quad m = y'$

$y' = 2x - 2 \quad 2 = 2x - 2$

$y = -\frac{1}{2}x - 1 \quad 2x = -2 - 2$

$y' = -\frac{1}{2} \quad -2x = -4$

$m_1 = -\frac{1}{2} \quad x = 2$

$m_2 = 2$

$y = x^2 - 2x + 3$

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

$= 4 - 4 + 3$

$= 3$

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

$y - 3 = 2(x - 2)$

$y - 3 = 2x - 4$

$y - 2x + 1 = 0$

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86. Persamaan garis singgung pada kurva $y = x^2 + 9x - 1$ di titik $(-1, -9)$ adalah...

=> B. $-2x + y + 2 = 0$

$y = x^2 + 9x - 1$ $\quad m = y'$ $\quad y - y_1 = m(x - x_1)$

$y' = 2x + 9$ $\quad = 2(-1) + 9$ $\quad y + 9 = 2(x + 1)$

$= 2$ $\quad y + 9 = 2x + 2$

$-2x + y + 2 = 0$

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87. Persamaan garis singgung pada kurva $y = 100x^3$ di titik berabsis -1 adalah...

=> A $300x + 200$

$y = 100x^3$ $\quad m = y'$ $\quad y = 100x^3$ $\quad y - y_1 = m(x - x_1)$

$y' = 300x^2$ $\quad = 300(-1)^2$ $\quad = 100(-1)^3$ $\quad y + 100 = 300(x + 1)$

$= 300$ $\quad = -100$ $\quad y + 100 = 300x + 300$

$y = 300x + 200$

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88. Grafik fungsi $y = 2x^3 - 15x^2 + 36x - 27$ akan naik pada selang interval...

=> E $x < 2$ atau $x > 3$

$y = 2x^3 - 15x^2 + 36x - 27$

$y' = 6x^2 - 30x + 36$

$y' > 0$

$6x^2 - 30x + 36 > 0$ => $6(x^2 - 5x + 6) > 0$

$6(x - 2)(x - 3) > 0$

$x = 2$ atau $x = 3$

$x < 2$ atau $x > 3$

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89. Fungsi f yang ditentukan oleh $y = x^3 + 6x^2 - 15x$ turun pada interval..

=> B $-5 < x < 1$.

$y = x^3 + 6x^2 - 15x$ → $3(x^2 + 4x - 5) < 0$

$y = 3x^2 + 12x - 15$ → $3(x-1)(x+5) < 0$

$y' < 0$ → $x = 1$ atau $x = -5$

$3x^2 + 12x - 15 < 0$ → $-5 < x < 1$

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90. kurva $f(x) = x^3 + 3x^2 - 9x - 7$ turun pada interval...

=> B $-3 < x < 1$

$f(x) = x^3 + 3x^2 - 9x - 7$ → $3(x^2 + 2x - 3) < 0$

$f'(x) = 3x + 6x - 9$ → $3(x-1)(x+3) < 0$

$f'(x) < 0$ → $x = 1$ $x = -3$

$3x^2 + 6x - 9 < 0$ → $-3 < x < 1$

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91. Fungsi f yang dirumuskan dengan $f(x) = 3x^5 - 5x^3$ turun pada interval...

=> A $-1 < x < 0$ atau $0 < x < 1$

$f(x) = 3x^5 - 5x^3$ → $15x^2(x^2 - x) < 0$

$f'(x) = 15x^4 - 15x^2$ → $15x^2(x-1)(x+0) < 0$

$f'(x) < 0$ → $x = 1$ $x = 0$

$15x^4 - 15x^2 < 0$ → $-1 < x < 0$ atau $0 < x < 1$

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92. Fungsi f yang dirumuskan dengan $f(x) = x^3 + 3x^2 - 9x - 1$ naik pada interval...

=> B. $x < -3$ atau $x > 1$

$f(x) = x^3 + 3x^2 - 9x - 1$ $3(x^2 + 2x - 3) > 0$

$f'(x) = 3x^2 + 6x - 9$ $3(x-1)(x+3) > 0$

$f'(x) > 0$ $\quad x = 1 \quad x = -3$

$3x^2 + 6x - 9 > 0$ $\quad x < -3$ atau $x > 1$

93. Fungsi $f(x) = x^3 + 3x^2 - 9x - 7$ turun pada interval...

=> c. $-3 < x < 1$

$f(x) = x^3 + 3x^2 - 9x - 7$ $\quad \rightarrow 3(x^2 + 2x - 3) < 0$

$f'(x) = 3x^2 + 6x - 9$ $\quad 3(x-1)(x+3) < 0$

$f'(x) < 0$ $\quad x = 1 \quad x = -3$

$3x^2 + 6x - 9 < 0$ $\quad -3 < x < 1$

94. Grafik $y = x^3 + 3x^2 - 5$ turun untuk semua nilai x yang memenuhi...

=> A. $-2 < x < 0$

$y = x^3 + 3x^2 - 5$ $\quad \rightarrow 3(x^2 + 2x) < 0$

$y' = 3x^2 + 6x$ $\quad 3(x+2)(x+0) < 0$

$y' < 0$ $\quad x = -2 \quad x = 0$

$3x^2 + 6x < 0$ $\quad -2 < x < 0$

95. Diketahui $f(x) = 2x^3 - 6x^2 - 18x$. Grafik fungsi $f(x)$ naik pada interval...

=> D. $x < -1$ atau $x > 3$

$f(x) = 2x^3 - 6x^2 - 18x$ $\quad \rightarrow 6(x^2 - 2x - 3) > 0$

$f'(x) = 6x - 12x - 18$ $\quad 6(x+1)(x-3) > 0$

$f'(x) > 0$ $\quad x = -1 \quad x = 3$

$6x^2 - 12x - 18 > 0$ $\quad x < -1$ atau $x > 3$

96. Grafik fungsi $f(x) = (x+1)(x^2+9x-1)$ turun pada interval...

=> B $-3 < x < -1/3$

$f(x) = (x+1)(x^2+9x-1)$

$f'(x) = 3x^2 + 10x + 3$

$f'(x) < 0$

$3x^2 + 10x + 3 < 0$ -> $(3x+1)(x+3)$

$x = -1/3 \quad x = -3$

$-3 < x < -1/3$

97. Grafik fungsi $y = -2/3x^3 + x^2 + 12x - 10$ naik pada interval...

=> E $x < -2$ atau $x > 3$

$y = -2/3x^3 + x^2 + 12x - 10$

$y' = -2x^2 + 2x + 12$

$y' > 0$

$-2x^2 + 2x + 12 > 0$ -> $-2(x^2 - 6x - 6) > 0$

$-2(x+2)(x-3) > 0$

$x = -2 \quad x = 3$

$x < 2$ atau $x > 3$

98. Grafik fungsi $y = -x^3 - 3x^2 + 9x + 1$ turun pada interval...

=> E $-3 < x < 1$

$y = -x^3 - 3x^2 + 9x + 1$

$y' = -3x^2 - 6x - 9$

$y' < 0$

$-3x^2 - 6x - 9 < 0$ -> $-3(x^2 + 2x - 3) < 0$

$-3(x+3)(x-1) < 0$

$x = -3 \quad x = 1$

$-3 < x < 1$

99. Grafik fungsi $y = -x^4 + 8x^2 + 9$ naik untuk nilai x pada interval...

=> C $x < -2$ atau $0 < x < 2$

$y = -x^4 + 8x^2 + 9$

$y' = -4x^3 + 16x$

$-4(x^3 + 4x) > 0$

$-4(x^2 + 4)(x - 0) > 0$

$y' > 0$ $x = -2$ $x = 0$

$-4x^3 + 16x > 0$ $x < -2$ atau $0 < x < 2$

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100 Grafik fungsi $f(x) = \frac{2}{3}x^3 + \frac{1}{2}x^2 - 3x - 1$ naik pada interval...

=> B. $x < -\frac{3}{2}$ atau $x > 1$

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

$f'(x) = 2x^2 + x - 3$

$f'(x) > 0$

$2x^2 + x - 3 > 0$ → $(2x + 3)(x - 1)$

$x = -\frac{3}{2}$ $x = 1$

$x < -\frac{3}{2}$ atau $x > 1$
