PAST PAPER QUESTIONS GRADE 12 MATHEMATICS

DO THESE QUESTIONS AS PART OF REINFORCING THE CONCEPTS

QUESTION 1

1.1 Solve for x:

1.1.1 $x^2 - 4x + 3 = 0$ (3)

1.1.2 $5x^2 - 5x + 1 = 0$ (correct to TWO decimal places) (3)

1.1.3 $x^2 - 3x - 10 > 0$ (3)

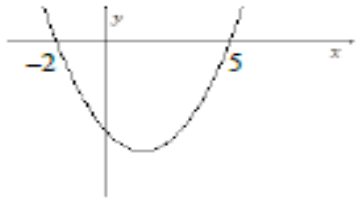
1.1.4 $3\sqrt{x} = x - 4$ (4)

1.2 Solve simultaneously for x and y:

$3x - y = 2$ and $2y + 9x^2 = -1$ (6)

ANSWERS

QUESTION/VRAAG 1

1.1.1	$x^2-4x+3=0$ $(x-3)(x-1)=0$ $x=3$ or $x=1$	✓factors/correct subt in formula ✓ $x=3$ ✓ $x=1$ (3)
1.1.2	$5x^2-5x+1=0$ $x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$ $=\frac{5\pm\sqrt{25-4(5)(1)}}{2(5)}$ $=\frac{5\pm\sqrt{5}}{10}$ $x=0,72$ or $x=0,28$	✓substitution into the correct formula ✓ $x=0,72$ ✓ $x=0,28$ (3)
1.1.3	$x^2-3x-10>0$ $(x-5)(x+2)>0$ **OR/OF**   $x<-2$ or $x>5$	✓factors/ critical values ✓✓ $x<-2$ or $x>5$ (3)
1.1.4	$3\sqrt{x}=x-4$ $9x=x^2-8x+16$ $x^2-17x+16=0$ $(x-16)(x-1)=0$ $x=16$ or $x=1$ NA	✓ squaring both sides ✓ $x^2-17x+16=0$ ✓ factors ✓ answer with selection (4)

ANSWERS

1.2	$2y+9x^2=-1$.....(1) $3x-y=2$ ..... (2) $y=3x-2$ .....(3)	✓ $y=3x-2$
	$2(3x-2)+9x^2=-1$	✓substitution
	$6x-4+9x^2=-1$	
	$9x^2+6x-3=0$	✓ standard form
	$3x^2+2x-1=0$	
	$(3x-1)(x+1)=0$	✓factors
	$x=\frac{1}{3}$ or $x=-1$	✓both x values
	$y=-1$ or $y=-5$	✓both y values
		(6)

QUESTION 8

8.1 Determine $f'(x)$ from first principles if it is given $f(x) = x^2 - 5$. (5)

8.2 Determine $\frac{dy}{dx}$ if:

8.2.1 $y = 3x^3 + 6x^2 + x - 4$ (3)

8.2.2 $yx - y = 2x^2 - 2x \quad ; \quad x \neq 1$ (4)

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ANSWERS FOR 8.2 IN VIDEO ON POWER RULE ON WEBSITE

QUESTION/VRAAG 8

8.1

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

$$= \lim_{h \to 0} \frac{x^2 + 2xh + h^2 - 5 - x^2 + 5}{h}$$

$$= \lim_{h \to 0} \frac{h(2x + h)}{h}$$

$$= \lim_{h \to 0} (2x + h)$$

$$= 2x$$

✓ $x^2 + 2xh + h^2 - 5$
✓ simplification
✓ factorisation
✓ $\lim_{h \to 0} (2x + h)$
✓ $2x$

(5)

7.2 Determine $\frac{dy}{dx}$ if $y = 4x^8 + \sqrt{x^3}$ (3)

7.3 Given: $y = ax^2 + a$

Determine:

7.3.1 $\frac{dy}{dx}$ (1)

7.3.2 $\frac{dy}{da}$ (2)

ANSWERS FOR 7.2 and 7.3 in video on Power rule on website