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# BA PROVINCIAL FREE BIRD INSTITUTE

## ANNUAL EXAMINATION

## YEAR 12 MATHEMATICS 2020

## ANSWER BOOK

**INSTRUCTIONS**

1. Write all your answers in this **Answer Book.**
2. Write your answer to each question in the appropriate part of this **Answer Book**.
3. Answer all questions with a blue or black ballpoint pen. Do not use a red pen. You may use a pencil only for drawing graphs.
4. If you use extra sheets of paper be sure to show clearly the number of the question(s) being answered to tie each sheet securely in this **Answer Book** at the appropriate places.
5. Before handing in this **Answer Book**, check that your Indexand **Year** are at the top of this page.

| **Marks Gained:** |
| --- |
| |

## STRAND 1 BASIC MATHEMATICS [12 marks]

1._____ 2._____ 3._____ **(3 marks)**

4.

$5^{2x+1} = 25$

**(1 mark)**

5.

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

**(2 marks)**

6.

$$\frac{9^{4x}}{3^{x}}$$

**(2 marks)**

7.(a) Value of m

**(1 mark)**

(b) Identity element

**(1 mark)**

(c) Inverse of 0

**(1 mark)**

(d) Reason:

**(1 mark)**

## STRAND 2 ALGEBRA [18 marks]

1._____ 2._____ 3._____ **(3 marks)**

4. $\sum_{n=1}^{4}(n+3)$

**(2 marks)**

5. $\frac{x+2}{2} - \frac{x-3}{3} = -2$

**(2 marks)**

6. (i) Discriminant

(1 mark)

(ii) Nature of the roots

(1 mark)

7. $x^2 - 2x - 3 = 0$

(2 marks)

8. $y = \frac{2x+3}{x-4}$

(2 marks)

9. Other two factors

**(2 marks)**

10. Sum to infinity

**(1 mark)**

11.(i)

**(1 mark)**

(ii)

**(1 mark)**

## STRAND 3 GRAPHS [12 marks]

1._____ 2._____ 3._____ **(3 marks)**

4. Equation

**(1½ marks)**

5. $y = x + 4$ and $y = \frac{14x+56}{x+25}$

**(3 marks)**

6.(i) $x-$intercept

**(½ mark)**

(ii) $y-$intercept

**(½ mark)**

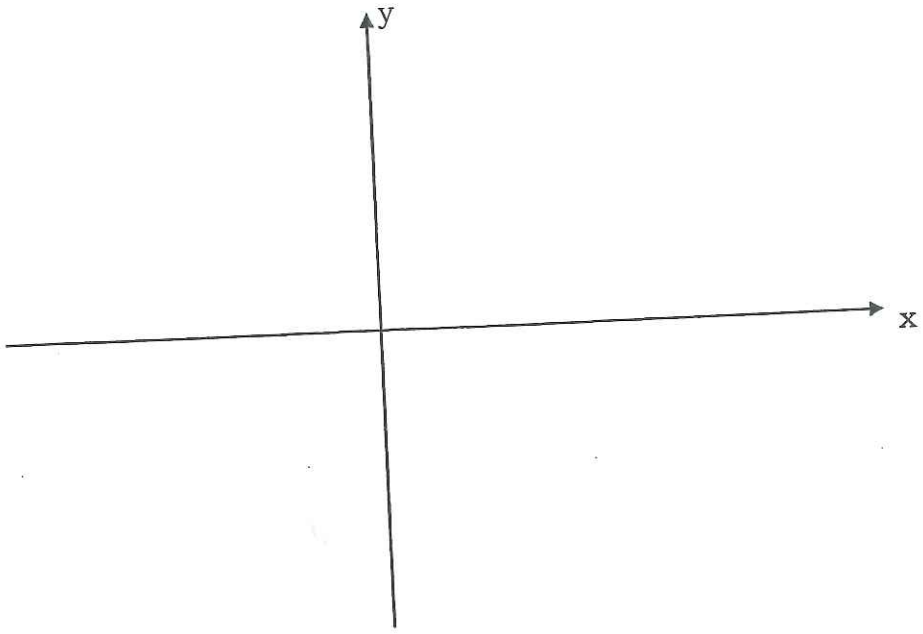
(iii) Vertical asymptote

**(½ mark)**

(iv) Horizontal asymptote

**(½ mark)**

(v)




**(2½ marks)**

## STRAND 4 COORDINATE GEOMETRY [7 marks]

1._____ 2._____ **(2 marks)**

3.(i) Length of AB

**(1 mark)**

(ii) Gradient of AB

**(1 mark)**

(iii) Gradient of BC

**(1 mark)**

4. Value of p

**(2 marks)**

## STRAND 5 TRIGONOMETRY [10 marks]

1._____ 2._____ **(2 marks)**

3. Fencing wire needed

**(2 marks)**

4. $\sin(\theta + 45^0) = \frac{1}{3}$

**(2 marks)**

5.

**(2 marks)**

6.

**(2 marks)**

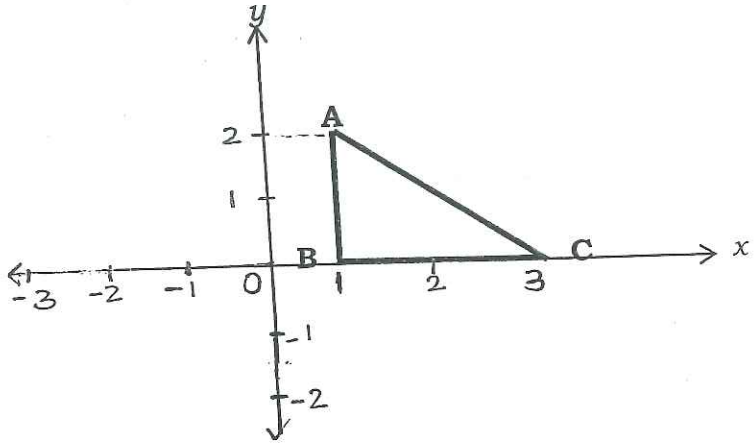
## STRAND 6 MATRICES AND TRANSFORMATION [7 marks]

1._____ **(1 mark)**

2.(i) Coordinates of B' and C'

**(2 marks)**

(ii)




**(2 marks)**

(iii)

**(1 mark)**

(iv)

**(1 mark)**