

## INSTRUCTIONS

- Answer all the questions
- Calculators may be used, unless stated otherwise
- If necessary, round answers off to TWO decimal spaces
- Show all your calculations
- Work neatly
- Good luck!!!!!!



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### QUESTION 1

1.1 Show that the decimal  $3,2\dot{1}\dot{8}$  is a rational number. (4)

1.2 Determine, without the use of a calculator, between which two integers the number  $\sqrt{30}$  will lie. (2)

[6]

### QUESTION 2

Expand and simplify:

2.1  $(a-2)^2 - a(a+4)$  (3)

2.2  $(2m-3)(4m^2+9)(2m+3)$  (2)

2.3  $(9x^2+12xy+16y^2)(3x-4y)$  (2)

2.4  $m\left(m+\frac{1}{m}\right) + \frac{1}{m}(m+1)$  (3)

[10]

### QUESTION 3

Factorise the following expressions completely:

3.1  $(a-b)^2 - 3(b-a)$  (3)

3.2  $\frac{1}{27}x^3 + 216$  (3)

3.3  $m^3 - m^2 - mn^2 + n^2$  (4)

[10]

### QUESTION 4

Simplify the following expressions, assuming all denominators are non-zero:

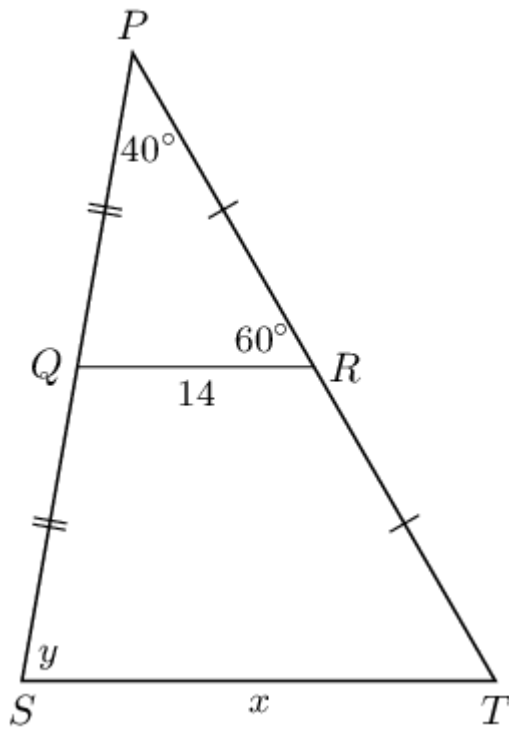
4.1  $\frac{4x^2-1}{3x^2+10x+3} \div \frac{6x^2+5x+1}{4x^2+11x-3} \times \frac{9x^2+6x+1}{8x^2-6x+1}$  (7)

4.2  $\frac{x^2-3x+9}{x^3+27} + \frac{x-2}{x^2+4x+3} - \frac{1}{x-2}$  (7)

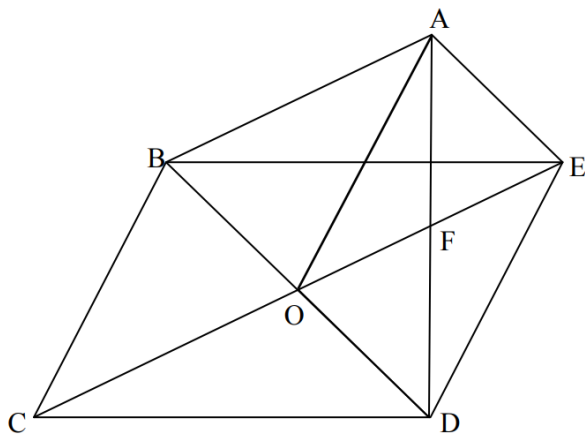
[14]

**QUESTION 5**

5.1 Given that  $PQ = QS$  and  $PR = RT$ , prove that  $QR \parallel ST$  and  $ST = 2QR$  (5)



5.2 In the diagram, **AODE** is a parallelogram. Also, **OF** is parallel to **BA**.  
**Prove that ABOE is a parallelogram.** (5)



**Total: /50**

## INSTRUKSIES

- Beantwoord al die vrae.
- Sakrekenaars mag gebruik word, tensy anders vermeld.
- Indien nodig, rond af tot TWEE desimale plekke.
- Toon al jou berekeninge.
- Werk netjies.
- Sterkte!!!!!!

### VRAAG 1

1.1 Wys dat die desimale getal  $3,2\dot{1}\dot{8}$  'n rasionale getal is. (4)

1.2 Bepaal sonder die gebruik van 'n sakrekenaar, tussen watter twee heelgetalle die getal  $\sqrt{30}$  sal lê. (2)

[6]

### VRAAG 2

Brei uit en vereenvoudig:

2.1  $(a-2)^2 - a(a+4)$  (3)

2.2  $(2m-3)(4m^2+9)(2m+3)$  (2)

2.3  $(9x^2+12xy+16y^2)(3x-4y)$  (2)

2.4  $m\left(m+\frac{1}{m}\right)+\frac{1}{m}(m+1)$  (3)

[10]

### VRAAG 3

Faktoriseer die volgende uitdrukkings volledig:

3.1  $(a-b)^2 - 3(b-a)$  (3)

3.2  $\frac{1}{27}x^3 + 216$  (3)

3.3  $m^3 - m^2 - mn^2 + n^2$  (4)

[10]

### QUESTION 4

Vereenvoudig die volgende uitdrukkings, neem aan dat alle noemers nie-nul is nie:

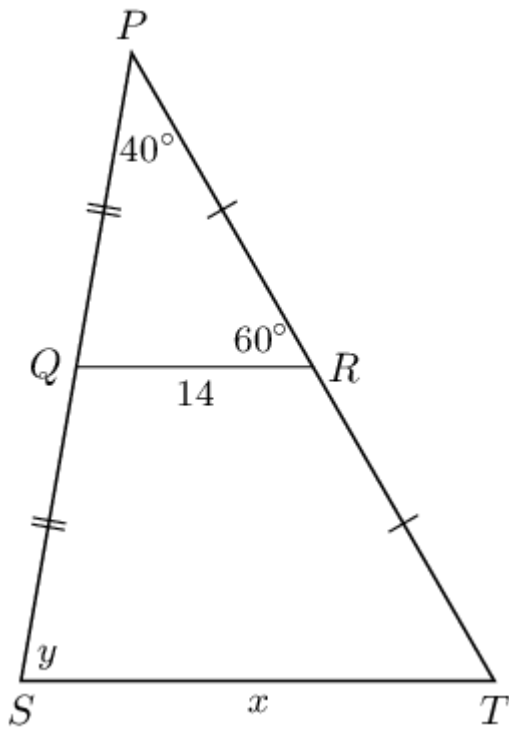
4.1  $\frac{4x^2-1}{3x^2+10x+3} \div \frac{6x^2+5x+1}{4x^2+11x-3} \times \frac{9x^2+6x+1}{8x^2-6x+1}$  (7)

4.2  $\frac{x^2-3x+9}{x^3+27} + \frac{x-2}{x^2+4x+3} - \frac{1}{x-2}$  (7)

[14]

**VRAAG 5**

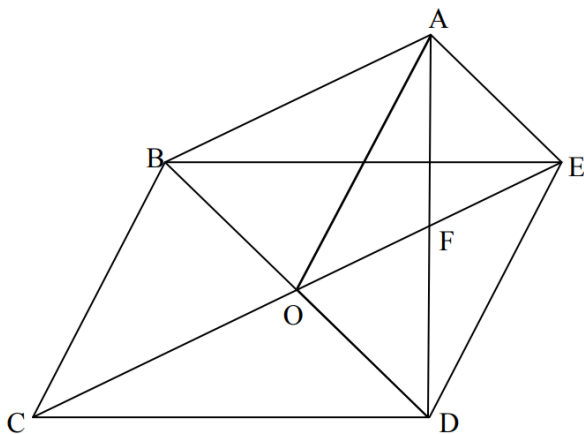
5.1 Gegee dat  $PQ = QS$  en  $PR = RT$ , bewys dat  $QR \parallel ST$  en  $ST = 2QR$  (5)



5.2 In die diagram, is **AODE** 'n parallelogram. Ook, **OF** is parallel aan **BA**.

**Bewys dat ABOE 'n parallelogram is.**

(5)



Totaal: /50

**Sources:**

<https://edwardsmaths.com/>