No.: intensive mathematic Date:

PBM1035 Patrickson Jimbau IPP1009

chapter 7 functions and graphs

checkpoint 1

1) function $g(x) = 2x^2 + 2x - 1$, find $g(-1)$, $g(0)$ and $g(1)$

$g(-1)$

$g(x) = 2x^2 + 2x - 1$

$g(-1) = 2(-1)^2 + 2(-1) - 1$

$g(-1) = -1$

$2(1) - 2 - 1$

$= 2 - 3 = -1$

$g(1) = 2(1)^2 + 2(1) - 1$

$= 3$

$g(0)$

$g(x) = 2x^2 + 2x - 1$

$g(0) = 2(0)^2 + 2(0) - 1$

$g(0) = -1$

3) a) gradient of AB

A(0, 3) B(4, -5)

x_1 y_1 x_2 y_2

$\text{gradient} = \frac{-5-3}{4-0}$

$= \frac{-8}{4}$

$m = -2$

b) midpoint of AB

A(0, 3) B(4, -5)

$\text{midpoint} = \left(\frac{0+4}{2}, \frac{3+(-5)}{2}\right)$

$= \left(\frac{4}{2}, \frac{-2}{2}\right)$

$\text{midpoint} = (2, -1)$

No.: Date:

c) equation of AB

A (0 , 3) B (4 , -5)
x_1 y_1 x_2 y_2

$y = mx + c$

$m = -2$ ✓

$y = -2x + c$

$3 = -2(0) + c$

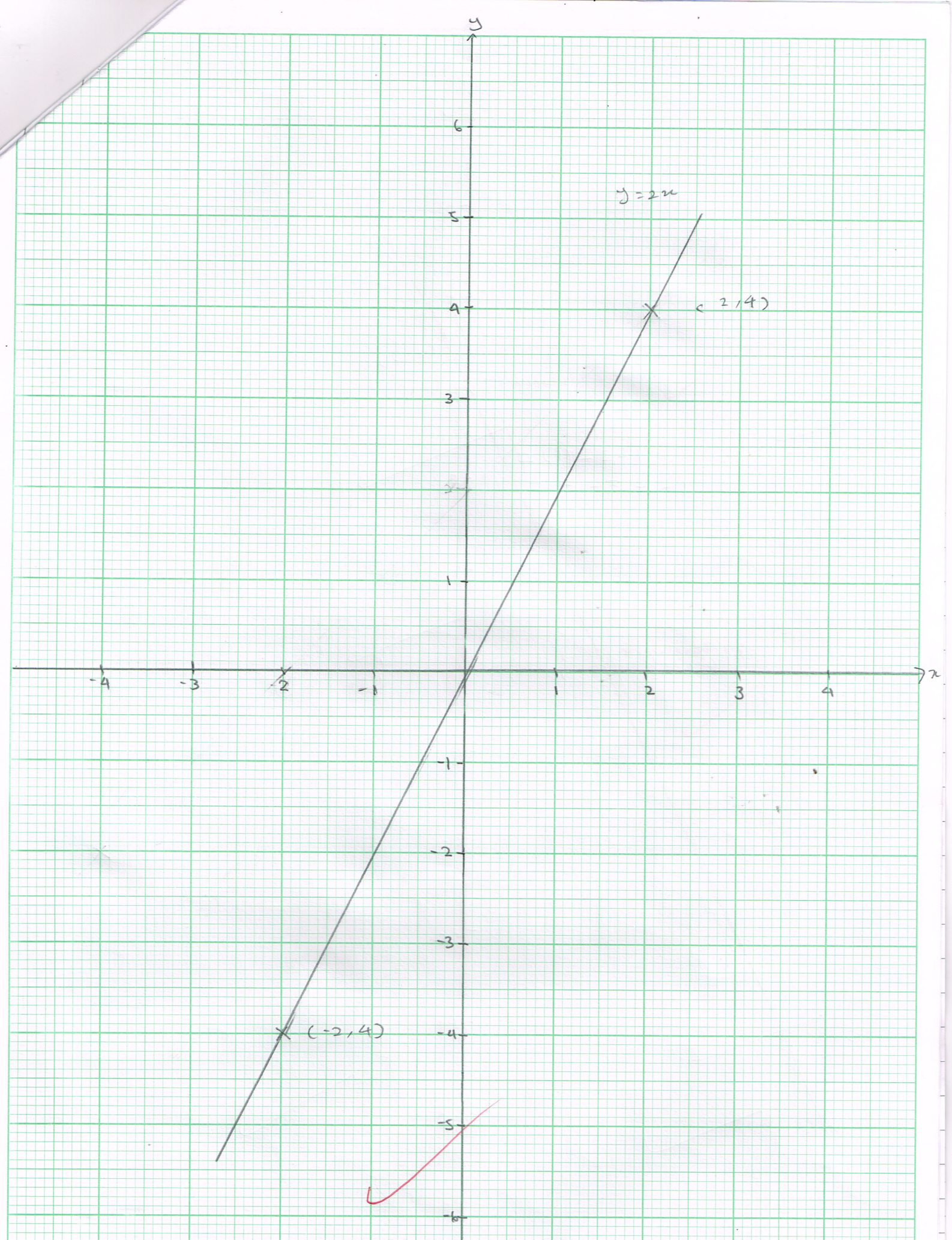
$c = 3$ ✓

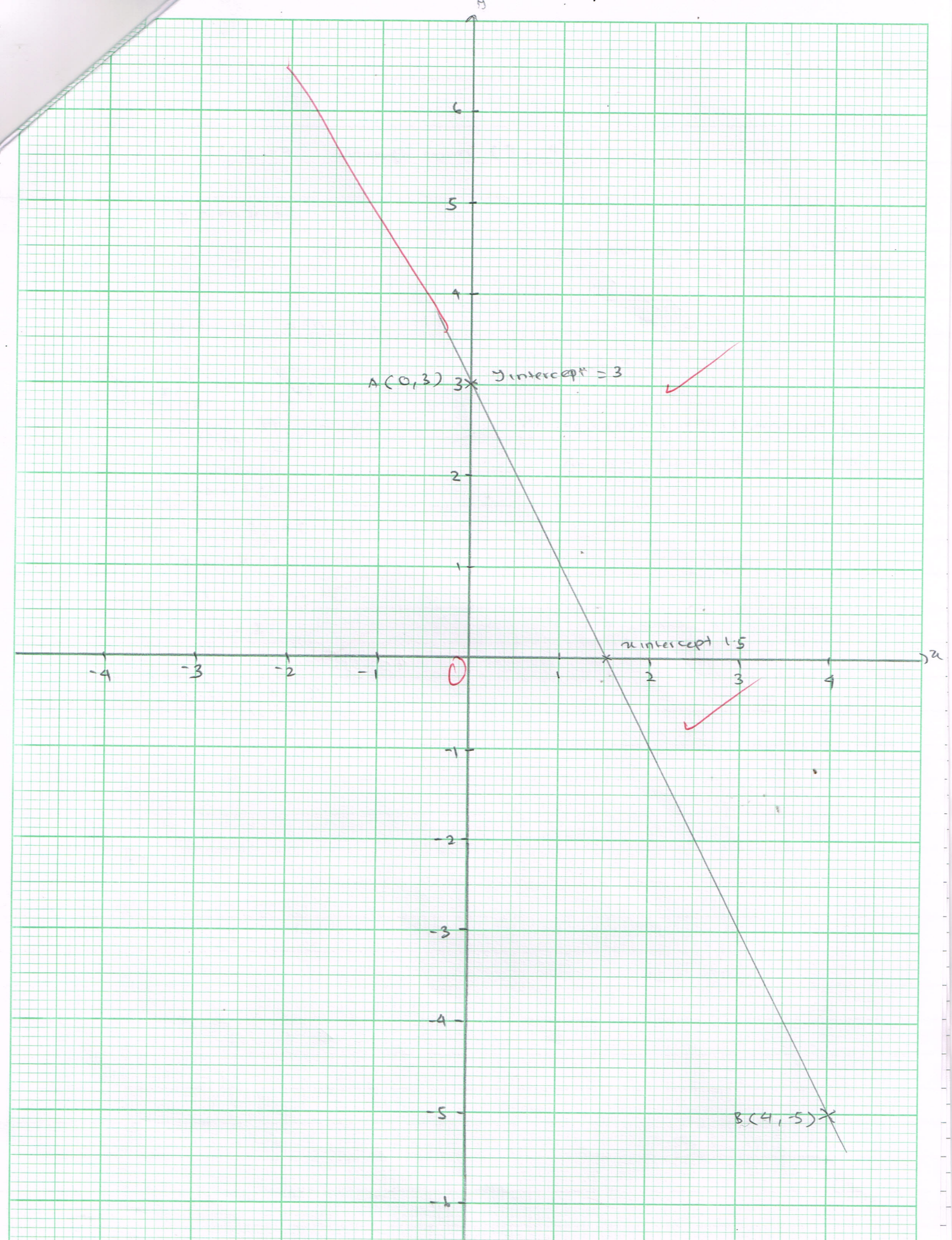
equation AB

$y = -2x + 3$ ✓

4c) $y = 2x - 3$

slope line = $2x$ ✓


y
x
y = 2x
(2, 4)
(-2, 4)
6
5
4
3
1
-1
-2
-3
-4
-5
-6
-4
-3
-2
-1
1
2
3
4


y
x
A(0,3)
y intercept = 3
x intercept 1.5
B(4,-5)
6
5
4
3
2
1
-1
-2
-3
-4
-5
-6
-4
-3
-2
-1
1
2
3
4

No.: ..... Date: .....

4b) $y = \frac{1}{2}x - 7$ through point $(3, -4)$

$y = mx + c$

1 $m = \frac{1}{2}$ ✓

perpendicular $= m_1 \cdot m_2 = -1$

$\frac{1}{2} \cdot m_2 = -1 \times 2$

$1 \times m_2 = -2$ ✓

$y = -2x + c$ ✓

$-4 = -2(3) + c$

$-4 = -6 + c$

$-4 + 6 = -6 + 6 + c$

$c = 2$ ✓

equation 2 = $y = -2x + 2$ ✓

$m_1 \cdot m_2 = -1$

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

∴ equation 1 and equation 2 are perpendicular to each other. ✓

No.: ..... Date: .....

5a) equation of parallel line

$y = -\frac{1}{4}x + 5$

$y = mx + c$

$m = -\frac{1}{4}$ ✓

$(2, -1)$

$y = -\frac{1}{4}x + c$ ✓

$-1 = -\frac{1}{4}(2) + c$

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

$-1 + \frac{1}{2} = -\frac{1}{2} + \frac{1}{2} + c$ ✓

$c = -\frac{1}{2}$ ✓

new equation = $y = mx + c$

$y = -\frac{1}{4}x - \frac{1}{2}$ ✓

b) lines $y = 2x + 3$ and $y = 2x - 5$ is parallel because it have the same gradient. ✓