MA1200 TAKE HOME PROBLEM SET 2

The following is the second take-home assignment of MA1200, which counts 3 points of total 100 of your final score of the course.

Please submit it via canvas in a pdf file (you can handwrite the answers and take photos by your phone, then make it into a pdf file, see for example, https://www.wikihow.com/Convert-JPG-to-PDF) for how to combine jpg files to a pdf; you can also do it by note-taking apps on an iPad or an Surface)

Q1. $f(x) = 3x^2 + 18x + 8$, find the range, and sketch the grapgh.

Q2. Factorize $3x^3 + 4x^2 - 17x - 6$ into product of three linear factors (hint, try $x = 2$)

Q3. Express $\dfrac{x^2 + 11x + 20}{(x-1)(x+3)^2}$ into partial fractions.

Q4. Rewrite $3\cos(x) - 4\sin(x)$ as $r\cos(x + \alpha)$, where $r > 0$ and $\alpha \in (0, \pi/2)$. (hint, $\cos(a + b) = \cos(a)\cos(b) - \sin(a)\sin(b)$)

Q5. Solve $3\cos(x) - 4\sin(x) = 5/2$

Q6. Solve $\sin(3\theta) = \cos(2\theta)$

The assignment is due on 23:59 of Oct 23, Friday.

You will lose 1 point for each day of late submission. All submissions after the midnight of Oct 26 will be marked as 0.

Date: October 14, 2020.