

Pure Math. 3

P₃

Modulus functions.

Exercise - 1.

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classmate

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Q1. Showing all necessary working, solve the equation, $3|2^x - 1| = 2^x$, giving your answer correct to 3 significant figures. S-18/32/Q1 --[4]

Q2. Find the set of values of x satisfying the inequality, $2|2x - a| < |x + 3a|$, where a is a positive constant. W-18/31/Q1 --[4]

Q3. Solve the inequality $3|2x - 1| > |x + 4|$ W-18/32/Q1 --[4]

Q4. Solve the inequality $|x - 4| < 2|3x + 1|$ M-17/32/Q2 --[4]

Q5. Solve the inequality $|2x + 1| < 3|x - 2|$ S-17/31/Q1 --[4]

Q6. Solve the inequality $|x - 3| < 3x - 4$ S-17/32/Q2 --[4]

Q7. (i) Solve the equation $2|x - 1| = 3|x|$ --[3]

(ii) Hence solve the equation $2|5^x - 1| = 3|5^x|$, giving your answer correct to 3 significant figures. S-16/31/Q1 --[2]

Q8. Solve the inequality $2|x - 2| > |3x + 1|$ S-16/33/Q1 --[4]

Q9. Solve the inequality $|x - 2| > 2x - 3$ S-15/33/Q2 --[4]

Q10. Solve the inequality $|2x - 5| > 3|2x + 1|$ W-15/31/Q1 --[4]

Q11. Solve the inequality $|x + 2a| > 3|x - a|$ S-14/32/Q1 --[4]
where a is a positive constant.

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Answers

Q1. $2^x = \frac{3}{2}$ and $2^x = \frac{3}{4}$
 $\therefore x = 0.585$ & $x = -0.415$

Q2. $-\frac{1}{2}a < x < \frac{5}{3}a$

Q3. $x > \frac{7}{5}$, $x < -\frac{1}{7}$

Q4. $x < -\frac{6}{5}$; $x > \frac{2}{7}$

Q5. $x < 1$ and $x > 7$

Q6. $x > \frac{7}{4}$

Q7 (i) $x = -2$ and $\frac{2}{5}$

(ii) $5^x = \frac{3}{5}$
or $x = -0.569$

Q8. $-5 < x < \frac{3}{5}$

Q9. $x < \frac{5}{3}$

Q10. $-2 < x < \frac{1}{4}$

Q11. $\frac{1}{4}a < x < \frac{5}{2}a$

