1
00:00:04,150 --> 00:00:02,070
[Music]

2
00:00:07,269 --> 00:00:04,160
what's up for october

3
00:00:09,669 --> 00:00:07,279
a harvest moon and a blue moon

4
00:00:11,749 --> 00:00:09,679
mars is up all night and a journey

5
00:00:14,629 --> 00:00:11,759
beyond the galaxy

6
00:00:15,669 --> 00:00:14,639
this month brings not just one but two

7
00:00:17,990 --> 00:00:15,679
full moons

8
00:00:19,670 --> 00:00:18,000
at the beginning and end of the month

9
00:00:21,910 --> 00:00:19,680
the full moon on october 1st

10
00:00:23,750 --> 00:00:21,920
is called the harvest moon the harvest

11
00:00:26,630 --> 00:00:23,760
moon is the name for the full moon that

12
00:00:28,630 --> 00:00:26,640
occurs closest to the september equinox

13
00:00:30,550 --> 00:00:28,640

one of two days per year when day and

14
00:00:32,069 --> 00:00:30,560
night are of equal length

15
00:00:34,470 --> 00:00:32,079
most years the harvest moon falls in

16
00:00:35,990 --> 00:00:34,480
september but every few years it shifts

17
00:00:37,830 --> 00:00:36,000
over to october

18
00:00:39,990 --> 00:00:37,840
the name traces back to both native

19
00:00:43,270 --> 00:00:40,000
american and european traditions

20
00:00:46,389 --> 00:00:43,280
related not surprisingly to harvest time

21
00:00:46,950 --> 00:00:46,399
at the end of october on the 31st we'll

22
00:00:49,750 --> 00:00:46,960
enjoy

23
00:00:50,950 --> 00:00:49,760
a second full moon when there are two

24
00:00:53,510 --> 00:00:50,960
full moons in a month

25
00:00:54,950 --> 00:00:53,520
the second is often called a blue moon

26
00:00:56,549 --> 00:00:54,960
there's another more traditional

27
00:00:57,110 --> 00:00:56,559
definition of a blue moon but this is

28
00:00:59,670 --> 00:00:57,120
the most

29
00:01:00,709 --> 00:00:59,680
known note that this is the only two

30
00:01:04,310 --> 00:01:00,719
full moon month

31
00:01:05,270 --> 00:01:04,320
in 2020 october is a great time for

32
00:01:07,350 --> 00:01:05,280
viewing mars

33
00:01:09,350 --> 00:01:07,360
as the planet is visible all night right

34
00:01:09,830 --> 00:01:09,360
now and reaches its highest point in the

35
00:01:12,469 --> 00:01:09,840
sky

36
00:01:14,630 --> 00:01:12,479
around midnight this period of excellent

37
00:01:15,910 --> 00:01:14,640
visibility coincides with the event

38
00:01:17,830 --> 00:01:15,920

known as opposition

39
00:01:20,310 --> 00:01:17,840
which occurs about every two years when

40
00:01:21,830 --> 00:01:20,320
mars is directly on the opposite side of

41
00:01:23,590 --> 00:01:21,840
earth from the sun

42
00:01:25,670 --> 00:01:23,600
this is also around the time when mars

43
00:01:26,469 --> 00:01:25,680
and earth come closest together in their

44
00:01:28,149 --> 00:01:26,479
orbits

45
00:01:30,630 --> 00:01:28,159
meaning the red planet is at its

46
00:01:32,630 --> 00:01:30,640
brightest in the sky so don't miss it

47
00:01:34,630 --> 00:01:32,640
spacecraft from several nations are

48
00:01:37,350 --> 00:01:34,640
currently on the way to mars

49
00:01:40,710 --> 00:01:37,360
including nasa's mars 2020 mission which

50
00:01:42,630 --> 00:01:40,720
is scheduled to land there in february

51
00:01:45,670 --> 00:01:42,640
finally this month it's a great time to

52
00:01:48,950 --> 00:01:45,680
try and spot the galaxy of andromeda

53
00:01:50,870 --> 00:01:48,960
andromeda is also known as m31

54
00:01:52,550 --> 00:01:50,880
it's a spiral galaxy similar in

55
00:01:53,990 --> 00:01:52,560
appearance to our own milky way but

56
00:01:56,069 --> 00:01:54,000
slightly larger

57
00:01:57,990 --> 00:01:56,079
both contain hundreds of billions of

58
00:02:01,109 --> 00:01:58,000
stars and we think

59
00:02:02,789 --> 00:02:01,119
trillions of planets now we can't see

60
00:02:03,590 --> 00:02:02,799
the overall shape of the milky way

61
00:02:05,910 --> 00:02:03,600
because we're

62
00:02:07,749 --> 00:02:05,920
inside it so andromeda gives us a sense

63
00:02:10,070 --> 00:02:07,759

of what our galaxy would look like if

64
00:02:12,470 --> 00:02:10,080
you could see it from afar

65
00:02:13,430 --> 00:02:12,480
andromeda is faint and best viewed with

66
00:02:15,350 --> 00:02:13,440
a telescope

67
00:02:17,430 --> 00:02:15,360
but you can observe it with binoculars

68
00:02:17,990 --> 00:02:17,440
or even a cell phone with a good camera

69
00:02:20,550 --> 00:02:18,000
on it

70
00:02:22,390 --> 00:02:20,560
even from light polluted areas and under

71
00:02:25,270 --> 00:02:22,400
very dark skies it's just

72
00:02:26,710 --> 00:02:25,280
barely a naked eye object so although it

73
00:02:28,869 --> 00:02:26,720
might be a little challenging

74
00:02:30,390 --> 00:02:28,879
it's worth it to see an entire galaxy

75
00:02:32,630 --> 00:02:30,400
with your own eyes

76
00:02:34,790 --> 00:02:32,640
to find the andromeda galaxy look to the

77
00:02:36,150 --> 00:02:34,800
northeast in the evening sky once it's

78
00:02:38,470 --> 00:02:36,160
truly dark

79
00:02:41,030 --> 00:02:38,480
find the sideways w that represents the

80
00:02:42,710 --> 00:02:41,040
throne of queen cassiopeia

81
00:02:44,550 --> 00:02:42,720
to the right of cassiopeia lies the

82
00:02:46,710 --> 00:02:44,560
constellation andromeda

83
00:02:47,830 --> 00:02:46,720
which includes this string of bright

84
00:02:50,229 --> 00:02:47,840
stars

85
00:02:51,350 --> 00:02:50,239
moving upward hang a left at the second

86
00:02:53,190 --> 00:02:51,360
of these bright stars

87
00:02:55,190 --> 00:02:53,200
and as you scan back over toward

88
00:02:58,390 --> 00:02:55,200

cassiopeia you'll notice a faint

89
00:03:00,070 --> 00:02:58,400
fuzzy patch of light that fuzzy patch is

90
00:03:03,190 --> 00:03:00,080
the andromeda galaxy

91
00:03:05,750 --> 00:03:03,200
located 2 million light years away

92
00:03:06,390 --> 00:03:05,760
if you manage it congratulations you've

93
00:03:09,589 --> 00:03:06,400
just gone

94
00:03:13,350 --> 00:03:09,599
intergalactic here are the phases of the

95
00:03:16,949 --> 00:03:14,949
you can catch up on all of nasa's

96
00:03:19,190 --> 00:03:16,959
missions to explore the solar system and

97
00:03:20,630 --> 00:03:19,200
beyond at nasa.gov

98
00:03:22,390 --> 00:03:20,640
i'm preston dykes from nasa's jet